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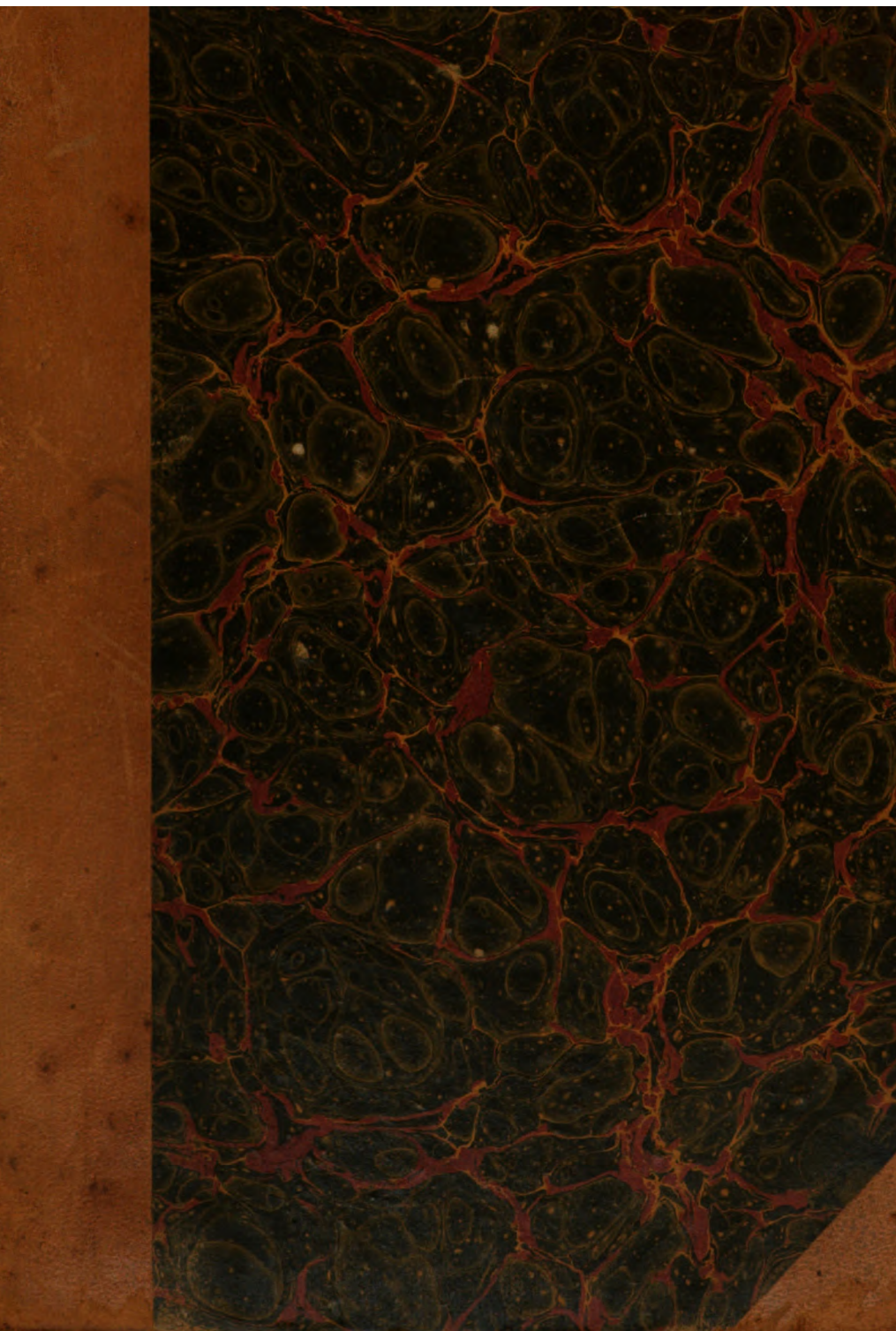
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*W. A. Bond*

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HALF-YEARLY ABSTRACT  
OF THE  
MEDICAL SCIENCES.

JANUARY—JUNE

1845.

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THE  
HALF-YEARLY ABSTRACT  
OF THE  
MEDICAL SCIENCES:  
BEING

1625-11

A PRACTICAL AND ANALYTICAL DIGEST OF THE CONTENTS OF THE PRINCIPAL BRITISH.  
AND CONTINENTAL MEDICAL WORKS PUBLISHED IN THE  
PRECEDING SIX MONTHS.

TOGETHER WITH

A SERIES OF CRITICAL REPORTS ON THE PROGRESS OF MEDICINE AND  
THE COLLATERAL SCIENCES DURING THE SAME PERIOD.

EDITED BY

W. H. RANKING, M.D. CANTAB.

PHYSICIAN TO THE SUFFOLK GENERAL HOSPITAL.

*Apparatu nobis opus est, et rebus exquisitis undique et collectis, arceasitis, comportatis.*  
CICERO.

VOL I.

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MDCCLXV.



## PREFACE.

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*Apparatu nobis opus est, et rebus exquisitis undique et collectis, arcescit, comportatis.*  
CICERO.

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To keep pace with the advance of medical science, by the perusal of the numerous works which are continually proceeding from the press, is a matter of difficulty even for the man of leisure; for the busy practitioner to do so is next to an impossibility. The latter individual, however, is precisely the one to whom a steady and progressive acquaintance with the practical improvements and discoveries of the day is most necessary, as it is he who is the most frequently placed under circumstances requiring a ready fund of therapeutical resources. To render this, under ordinary circumstances, impossibility, a matter of comparative facility, is the object of the present publication. It is intended therein to place before the profession the practically valuable information gathered from the records of all countries, in a form so condensed and tangible, that the man in active practice, to whom economy of time is of the utmost consequence, shall be able at a glance to make himself familiar with the discoveries, new doctrines, and improvements in each department of medical science, the seeking of which in their original sources would have involved such a sacrifice both of time and money as few would think themselves justified in encountering.

The value of similar undertakings to the present has long been recognized on the Continent, as is evidenced by the extended reputation of the *Jahrbücher* of Germany, and the *Encyclographies* of France and Belgium. It is the Editor's ambition that he may produce a work which shall occupy, in the estimation of the British practitioner, the same honourable position. In order that he may deserve the accomplishment of this his anxious wish, no amount of toil or expense has been spared by him. Not only is every periodical work of note published in Great Britain, America, France, and Germany, subscribed for and personally consulted, but every standard publication and monograph which can be obtained is analysed as it may come to hand. The Editor flatters himself that by this extensive labour he is able to offer to the profession an analysis of the real progress of the medical science more complete than has to his knowledge ever been attempted, as each volume of the "*Half-yearly Abstract*" will embrace every department of that science.

It is with peculiar satisfaction that the Editor is able to state, as a guarantee for the correctness of the work, that he has secured the assistance of men respectively eminent in the departments which have been intrusted to them; and whatever may be the opinion of the portion of the work which has fallen to his own immediate share, he feels convinced that the labours of his coadjutors will meet with a favourable reception.



## PREFACE.

The Editor scarcely deems it necessary to dilate upon the abstract necessity of being acquainted with the progressive medical literature of the day. The mere practical man, as he delighted to call himself,—in other words, the man who knows and wishes to know nothing more than falls under his own narrow sphere of observation—is, fortunately for science as much as for the public, nearly obsolete. Both the public at large and the profession itself have long discerned, that for one man who by his own unaided experience arrives at anything like eminence, a hundred remain for ever in an inglorious mediocrity, and both recognize the fact, that for a man to be a safe and a conscientious practitioner, he must be a constant and an indefatigable student. It is then in the humble hope of being able to offer increased facilities towards this necessary acquaintance with the results of the experience of others, that the Editor offers the present publication to the patronage of the profession; and he looks with confidence to the love of science which is the characteristic of the medical practitioner of the present day, for that support which his extensive engagements requires.

A few words as to the plan which has been adopted may not be out of place. The usual productions of the medical press are of two kinds; the one, simply practical, the other, though not in so direct a manner applicable to practice, such as is nevertheless necessary for the formation of those *principles* of treatment, without which, the hand that exhibits a medicine or wields an instrument, is as guilty of gambling as if it held a dice-box. It has been the Editor's endeavour, while he includes both species of information, to give a prominent place to that which is directly available at the bedside; for which reason, he has devoted to it a large portion of the work. The "Reports," which form the concluding part of each volume, are intended to comprise a survey of communications and works of the second kind, and at the same time to point out the practical bearing of each.

It will be observed, that in certain departments of the Medical Sciences, as Anatomy and Physiology, Chemistry, Forensic Medicine, and Materia Medica, no separate abstracts have been made. This has been determined upon after careful reflection, as it was thought that the subjects contained in those departments might with greater effect be embodied in the "Reports."

In now committing the result of much labour, expense, and anxiety, to the ordeal of public opinion, the Editor is willing to confide solely in its real merits for the success which he is anxious to obtain; but he at the same time requests his readers to make some allowance in this, the first volume, for the difficulties and drawbacks of which no one who has not attempted a similar undertaking can form an adequate idea.

DURY ST. EDMUNDS, June 1845.

# LIST OF BRITISH AND FOREIGN PERIODICALS REFERRED TO IN THE "HALF-YEARLY ABSTRACT."

## BRITISH.

*British and Foreign Medical Review.*  
*Medico-Chirurgical Review.*  
 " *Transactions.*  
*Transactions of the Provincial Medical Association.*  
*Edinburgh Medical and Surgical Journal.*  
*London and Edinburgh Monthly Journal.*  
*Dublin Journal of the Medical Sciences.*  
*Lancet.*  
*Medical Gazette.*  
*Provincial Medical Journal.*  
*Medical Times.*  
*Dublin Medical Press.*  
*Bell's Pharmaceutical Journal.*  
*Guy's Hospital Reports.*

## AMERICAN.

*American Journal of the Medical Sciences.*  
 " *of Science and Art.*  
*Philadelphia Medical Examiner.*  
*New-York Journal of Medicine.*

## FRENCH.

*Annales de Chirurgie.*  
 " *d'Hygiène.*  
 " *de Chimie et de Pharmacie.*  
 " *des Maladies de la Peau.*  
*Archives Générales de Médecine.*  
*Bulletin des Académies.*  
*Encyclographie Médicale.*  
 " *des Sciences Médicales.*  
*Journal des Connaissances Médico-Chirurgicales.*  
*Gazette des Hôpitaux.*  
 " *Médicale.*  
*Journal de Chirurgie de M. Malgaigne.*  
*Revue Médicale.*

## GERMAN.

*Schmidt's Jahrbucher.*  
*Zeitschrift für die Gesamte Medicin.*  
*Müller's Archiv für Anatomie, &c.*  
*Liebig's Annalen der Chemie und Pharmacie.*

N.B. Every periodical here specified is consulted *directly* by the Editor and his coadjutors.



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# ABSTRACT OF THE MEDICAL SCIENCES,

4c. 4c.

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## PART I.

### PRACTICAL MEDICINE, PATHOLOGY, & THERAPEUTICS.

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#### SECTION I. ZYMOTIC DISEASES.\*

ART. 1.—*On Prognosis in Typhoid Fever.* By M. ROSTAN.

(*Gazette des Hôpitaux*, Jan. 1845.)

[THE typhoid fever of the French and the typhus of this country, if not essentially distinct diseases, are at the least, there is reason to believe, distinct varieties of the same species. Certain it is that we shall look in vain in the continued fevers of Great Britain for that peculiar affection of the intestinal glands which forms so prominent a feature in the continental disease, and the constancy of which may well excuse the opinion held by many French pathologists, that typhoid fever is essentially a gastro-enteritis. It is no part, however, of this portion of the present work to enter into those controversial discussions, of which the subject of fever has at all times been so fertile a source; we merely allude to a point which necessarily involves a difference of opinion, in order to remind our readers that in the following observations the author refers to that form of the disease in which the abdominal complication plays an important part:]—

The prognosis in typhoid fever is always discouraging, even in the mildest forms of the complaint. The danger is in all cases proportionate to the age of the subject, being *cæteris paribus* greater in the old than in the young. Sex appears to exercise but little influence over the mortality of the malady; neither does climate produce any marked modification in the severity of its symptoms. It is always necessary in forming our prognosis to take the constitutional power of the patient into the account. A feeble constitution is always unfavourable; but it must be al-

\* The term Zymotic (ζύμωσις, to ferment,) is applied to that class of diseases, including those of epidemic, endemic, and contagious character, which arise in consequence of the introduction into the system of an animal or vegetable poison.

lowed, nevertheless, that we have frequently seen the robust more rapidly cut off by the fever than the weakly.

Mental distress and grief are among the most injurious circumstances to which a fever patient can be exposed. This was distinctly seen during the years 1814 and 1816, when the hospitals were crowded by sick soldiers who were rapidly destroyed under the depression consequent upon defeat. We have continually seen those patients sink who were harassed by the fear of death, while others less timid as constantly recovered. Excresses of all kinds are likewise unfavourable to the patient.

As regards the progress of the disease;—we have noticed that when typhoid fever passes rapidly through its different stages or periods, it is in the majority of cases apt to be fatal. Notwithstanding, a fever which at the onset is marked by alarming symptoms, may occasionally become sensibly ameliorated in the respect of danger.

The character of the local symptoms affords a most useful means of arriving at a correct prognosis; for instance, the predominance of cerebral symptoms declares the existence of a dangerous form of the disease; experience having shown that cerebral symptoms are present in a large proportion of fatal cases. The asthenic form of fever has also very commonly an unfavourable termination.

Delirium occurring early in this disease is more dangerous than when it happens later; it is also to be feared in proportion to its violence and duration. A certain value is justly attached also to the state of the tongue—for this organ to be dry and furred is a bad omen, but when in addition to this it becomes brown or black, the disease in the majority of instances proves fatal. When, on the contrary, the tongue is but little altered, or remains moist; or if, having become dry, it again becomes moist—it is either a sign of amendment, or indicates a mild form of fever. It is necessary in estimating the state of the tongue to notice whether or not the patient sleeps with the mouth open.

Vomiting is an unpleasant symptom, especially in the latter stages of the fever; it is of less consequence in the commencement. As regards the state of the bowels, some physicians look upon constipation with more alarm than diarrhœa. We are not of this opinion, but, on the contrary, regard an obstinate and continual purging as one of the worst symptoms which can arise.

Retention and dribbling of the urine during the course of typhus fever are bad signs, as these symptoms indicate extreme debility: so likewise are starting of the tendons and coma, for it is seldom that a patient recovers after their appearance. Among the most fatal signs we would also enumerate deafness, rapid emaciation, and the facies hippocratica.

A pulse of 120 is a symptom which ought not to be lightly regarded, especially in the latter stages of the complaint. It is rare that a patient recovers when the pulse has reached 140.

There are other circumstances which are to be considered as complications of this fever, and which must materially influence the nature of our prognosis; for instance, the occurrence of pneumonic or gangrenous sloughs on the sacrum, must render our opinion unfavourable. There is one symptom which, although it is considered to be critical by some, we consider to be almost inevitably of fatal augury; we allude to inflammation and swelling of the parotid glands. Our prognosis should also be

cautious when one or more abscesses occur in the cellular tissue of the limbs, or other parts of the body.

## ART. 2.—*Memoranda in the Treatment of Typhus Fever.*

By DR. DAVIDSON.

(*Edin. Monthly Journal*, and *Lancet*, 1844, p. 406.)

[The following extracts are a recapitulation of the principal points contained in a paper of considerable length upon the subject of fever and its complications.]

1. Typhus fever cannot be checked *in limine*; it is often tedious in its progress, causing great emaciation and exhaustion; we ought not therefore, without special reasons, to employ any measures calculated to lessen the powers of life; such as nauseants, bleeding, and excessive sweating.

2. The ordinary treatment may be as follows:—Place the patient in a large well-ventilated apartment, on a mattress with few bed-clothes; let the head be shaven and kept cool with an evaporating lotion; give a gentle purgative every second or third day; let the skin be bathed once or twice a day with tepid-water; and this may be accompanied with small doses of antimony or ipecacuanha. The drink should be light, cool, and slightly diuretic; the food nutritive but light. When there is a tendency to local congestion, a little calomel or hydragrym c. cretâ may be combined with the purgative; or calomel and opium may be given every six or eight hours. The application of two or three leeches to the temples or nostrils is often useful in cerebral congestion, and when there is intense headache, the forerunner of delirium. Blisters are likewise advantageous in such cases.

3. Mercury in small doses is useful in promoting the secretions, and in relieving internal congestion.

4. Opium is injurious in a large proportion of cases, from its tendency to induce congestion of the cerebral vessels; but when diarrhœa is present, it ought to be given with a view to check the exhausting discharges.

5. Wines, &c., as they contain both stimulant and nutritive elements, are most to be relied upon for supporting the strength. The pulse taken with the general symptoms of exhaustion, ought to be the guide for their exhibition.

6. Ammonia, camphor, and quinine, are not to be depended upon in bad cases.

7. When the disease is complicated with local affection in the head, chest, or abdomen, these must be treated on the same principles as the idiopathic disease, with this important modification, that evacuatives of all kinds must be used more sparingly, and that even in these cases, if there be much prostration of strength, wine must be exhibited, though more moderately than in the simple disease.

## ART. 3.—*On Pericarditis; a complication of Scarlatina.*

By S. ALISON, M.D., Physician to the Northern Dispensary, &c.

(*Medical Gazette*, Feb. 1845, p. 664.)

[There is no fact which should be more constantly present to the mind of the practical physician than the proneness of vital organs to assume a morbid action during the course of certain affections to which they have no

necessary pathological relation. That pericardial disease forms a serious complication in rheumatism has long been familiar to the profession; it would seem, from the following interesting article, that it is not uncommonly also a source of fatal mischief during the progress of scarlet fever:]—

The most cursory glance at the abstracts of the causes of death in this country prepared by the Registrar-General, suffices to indicate the great importance of scarlatina as a cause of mortality. The abatement of this mortality is well deserving of the best endeavours of the physician. Notwithstanding that the history of scarlatina has of late years been made more accurate and satisfactory under the able hands of Tweedie, Burrows, Wood, Willis, &c., much is still wanting to complete the portrait. The condition of certain organs during the course of the disease, and the complication which are wont to arise are not as yet fully made out.

A more extended knowledge of these complications will prove highly salutary, both by leading to increased precaution with a view to their prevention, and to an improvement in their treatment. It is with this impression that we have ventured to request the attention of the profession to a few facts connected with the disease, which have lately fallen under our notice. It has long been known that scarlatina is liable to be complicated with inflammation of the brain, but it does not appear that the possibility of the supervention of *pericarditis* is so generally recognized. The occurrence of three cases of this complication in our practice within the last few months has convinced us that the occurrence is more common than may be suspected, and has induced us to refer to various esteemed writers on scarlatina for the purpose of discovering what notice this complication has received.

The writers who have alluded to pericarditis during scarlatina are Dr. G. Burrows (Art. *Scarlatina*, in the *Library of Medicine*), and Dr. Robert Willis, who, in an able article, (No. 10 of the *London and Edinburgh Journal of Medical Science*), remarks that in examining bodies of those who had died of scarlet fever, he has sometimes found inflammation of the pericardium. Dr. Joy also observes, that pericarditis frequently makes its appearance in the course of eruptive fevers, and more especially of scarlatina. Dr. Copland, Rilliet and Barthez, and Puchelt, appear likewise to have been aware of the complication.

On the other hand, the list of those writers on scarlatina who make no allusion whatever to the intercurrent of pericarditis is very numerous. Bursarius, in his *Institutes of Medicine*, is silent on the subject, so likewise are Dr. Wells and Dr. Wood, who published a carefully-compiled report of the scarlatinous epidemic of 1835—6. Dr. George Hamilton, who has written on scarlatina in the 47th vol. of the *Edinburgh Medical and Surgical Journal*, does not once allude to the subject; neither does Dr. Hope in his work on *Diseases of the Heart*. Dr. Tweedie also, in his valuable paper on *Scarlatina* in the *Cyclopædia of Practical Medicine*, is silent on the subject. Dr. Watson, in his most practical *Lectures on the Practice of Physic*, does not place pericarditis among the complications of scarlatina, but, on the contrary, mentions that the affections of the joints simulative of rheumatism, occurring in course of scarlatina, may be distinguished from true rheumatism by the absence of cardiac implication. [The author illustrates his position by the mention of the following cases:]—

Case 1.—J. S. æt. 4, a fine healthy boy, became the subject of scarlatina last June. Eruption full, attended with considerable pyrexia; the throat much inflamed and swollen. The child had become apparently convalescent, when about three weeks from the accession of the eruption the scrotum was observed to be œdematous. The swelling extending over the surface of the body, he became an out-patient to one of the hospitals; under the treatment there pursued, the anasarca greatly diminished, notwithstanding which the general health became much deteriorated.

On 27th of August the anasarca was slight, but effusion into the right pleura was indicated by dullness on percussion, obscure respiration, and expansion of the side. The heart's action was rapid, violent, and tumultuous. There was also orthopnoea and great restlessness. Pulse 140, respiration 60 per minute. The urine was not albuminous. The patient rapidly became worse, and died, after suddenly calling out in an urgent manner and attempting to vomit.

*Autopsy* thirteen hours after death. The pericardium was intimately attached to the pleura costalis, and contained six ounces of sero-purulent fluid. The serous membrane was thickened both where it lined the pericardial sac and where it covered the heart, and was invested with a thick plastic lymph.

Case II.—Fred. Cook, æt. 6, well grown, was in perfect health until seven days since, when he was attacked by scarlet fever. The eruption appeared on the second day and disappeared on the fifth. During the night of the sixth day he was suddenly seized with violent pains in the precordia, and became restless and agitated; the mother remarked violent palpitations of the heart. When seen within twelve hours of this seizure he complained of severe pain in the region of the heart increased by pressure in the epigastric region. The impulse of the heart was stronger than natural, and was felt over the whole anterior part of the left chest,—the most cautious examination discovered neither bellows' nor rubbing sound. The pulse was 120, regular and full; features expressive of anxiety; urine scanty, and deposits the lithates.

V. S. ad 3ij. Mist. vini ant., Potass. tart. et nitrat. potassæ. Sæpe sumenda.—Hyd. chlorid. grs. ij, tertiis horis. Hirud. iij præcordiis.

The next day, Nov. 17th, the patient felt relieved, the precordial pains being much abated. The blood was slightly buffed, serum straw-coloured, sp. gr. 1025. The cough is less frequent and face less anxious.

Repetentur Hirud. tres præcordiis et continuentur medicamenta.

18th. Patient is much easier. 19th. No pain in the region of the heart; pulse 100. 22d. Sits up in bed.

After the lapse of ten days, the patient became the subject of anasarca with albuminuria, which was removed under the exhibition of Infus. gent. and Spt. æth. nitrici. At the present time (Dec. 18th) he is strong, runs about the house, and is rapidly regaining his florid colour. The heart's action, however, is still increased to a slight extent.

Case III.—27th Dec. 1844. John Jones, æt. 9, seized with scarlatina nine weeks ago. The eruption was general, and remained out two or three days. The patient complained of pain in the chest, with "thumping and knocking" of the heart during the period of the eruption. At the same time he suffered pains all over the body, but particularly in the ankles. The patient was treated for pleurisy, and recovered to a certain degree, but the precordial "thumping" still continued.



*Period of Accession of Pericarditis.* It is impossible to say positively at what period of the exanthem the affection of the heart supervened in the first case, for its presence was not suspected until the child was dying; but it is probable from the post-mortem appearance that the disease had existed from an early period. In the second case, the symptoms of pericarditis were strongly manifested on the seventh day of the exanthem. In the third case the excitement of the heart's action with the pain took place during the period of the eruption.

*Character of the Fever.* In all the three cases there was considerable inflammatory fever, the eruption was vivid, and persisted the usual time. The fauces in all the cases were more or less inflamed and swollen. The mucous membranes were reported to have been unusually red in the case which terminated fatally; in the case of Cook the tongue was red with elevated papillæ. Anasarca of a decided character showed itself in the first and second cases, but was not general in the third.

*Causes of the Pericarditis.* From a careful consideration of the cases above related, it appears probable that pericarditis, when it occurs as a complication of scarlet fever, may owe its origin to two different sources; viz., the presence of the specific poison in the blood, acting as a local irritant, and the presence of crystallizable compounds in the circulation, which should have been eliminated from the system by the kidneys.

That pericarditis should occur in the course of, or subsequent to, scarlatina, is not surprising. It is well ascertained that pericarditis is liable to follow obstructive disease of the kidneys, and it is further more familiar to all, that obstructive disease of the kidney is not uncommon during the convalescent period of scarlet fever. It would perhaps be difficult to explain the circumstance, did pericarditis not occur under circumstances known to be productive of inflammation of other serous membranes.

*Treatment.* This may be resolved into preventive and curative. The former must comprise means which will moderate the violence of the exanthem without unduly depressing the powers of the system. The curative treatment must be conducted upon those principles which regulate the management of inflammation of other serous membranes. General bleeding must be moderate, and employed only when the patient is still possessed of considerable strength. Leeches, mercury, and counter-irritation will be necessary. As a general rule it will be prudent to avoid blisters and oil of turpentine, on account of their special action upon the kidneys.

ART. 4.—*On Dropsy after Scarlet Fever:*—An interesting discussion on this subject took place at the Medical Society of London, at the meeting of Nov. 19, 1844, in the course of which many very practical remarks were elicited. The paper was read by Dr. Wilshire, who opposed the opinion too generally held, that the affection is in all cases inflammatory, and requires antiphlogistic treatment. He believed, on the contrary, that the disease is one of an asthenic character, especially in the children of the lower classes. He had found that in the greater number of cases the iodide of potassium given in a bitter infusion was of great utility, but he considered that quinine was frequently necessary in the later periods of the disease, and in those cases characterized by *anæmic* urine. The author agrees with M. Piorry that let the origin of the albuminous urine be what it may, the blood is altered in its constitution; and asks the question,

whether albuminuria, as consecutive to scarlet fever, does not *precede* the lesion of the kidney. Dr. Golding Bird, who took part in the discussion, recognizes two varieties or classes of cases of scarlatinal dropsy: the one arising from simple debility, which is usually speedily removed; the other caused by the fever, and which is highly dangerous, inasmuch as the blood is poisoned by containing the uneliminated elements of the urine. This latter class of cases, according to Dr. Bird, occurs in practice under three forms. In one the disease is very acute, and if seen early the urine is not only albuminous but contains the colouring matter of the blood also. In the second class, the urine is always albuminous but contains no blood. In these two cases Dr. B. orders a hot mustard poultice to the loins, and antimony in diaphoretic doses, maintaining at the same time an even temperature in the room. When the albumen has disappeared from the urine iron and quinine are required. In the third class of cases, which are chronic, support and tonic medicines are necessary from the first. Dr. B. remarks that he had never known dropsy follow in those cases of scarlatina in which *warm baths had been employed as soon as desquamation commenced.*

(Reported in the *Lancet*, Nov. 30, 1843, p. 298.)

#### ART. 5.—Case of Acute Glanders. By M. PAVARD.

(*Journal de Méd. et de Chirurg. pratiques.*)

[Although within the last few years several cases of glanders have been placed on record, it appears to us that the following instance is worthy of further publicity. At the bedside, practitioners are not sufficiently alive to the possible occurrence of this disease, and the diagnosis consequently becomes a matter of doubt and uncertainty. That the following is a genuine case of glanders we fully believe, as it tallies in the most minute particulars with a case which we happened to witness some years since in the hospital of La Charité, under M. Andral:—]

“M. De Bavent, æt. 43, was the owner of several horses which became glandered; not believing in the contagious nature of the disease, he attended to them himself, frequently cleansing the nostrils with his pocket-handkerchief. Some time after he became the subject of indurated axillary glands, with a pustular eruption on the hands. This subsided, but he still remained out of health, when he happened to wound his finger with the sharp part of a harness buckle. The hand had become much swollen, when M. P. was summoned, and recommended cataplasms and a free division of the wound: this was on the 24th of October. On the 27th, the patient was in much the same condition, the finger being more painful. On the 26th, nausea and vomiting supervened, and erysipelas showed itself on the dorsum of the hand. The wounded finger exhibited a large bulla filled with sanguineous fluid. Nov. 2d. The knees became red and tumefied, and pustules arose on the cheeks, the rupture of which gave issue to a yellowish sanies. There was considerable fever with thirst and delirium; the root of the nose now began to swell, and the face was puffy and of a dull red colour. The nostrils discharged a reddish fluid which quickly concreted upon the upper lip, and at the same time the forehead became covered with bullæ of the size of a pea which contained a yellow fluid. On the

5th, the local symptoms about the face had increased in intensity, and in addition, livid patches appeared on the extremities, resembling the ecchymosis from contusion. In the progress of the case fresh phlyctenæ arose in different parts of the body, and he died on the evening of the 6th completely exhausted.”—[The treatment adopted in this instance was of the most inert kind; bleeding was proposed, but fortunately for the patient not acceded to; the remainder of the treatment consisted in the exhibition of small doses of acetate of ammonia. The case which we have alluded to as having fallen under our own observation, was also fatal, although a more rational treatment, consisting in the employment of stimulants with sedatives, was adopted from the commencement.]

ART. 6.—*On the Treatment of Hydrophobia by the Euphorbia Villosa and Palustris.* By Dr. KREBEL.

(*Gazette des Hôpitaux*, Fevr. 13th, 1845.)

[The utter hopelessness of the attempts which have hitherto been made for the cure of this fearful malady render any suggestions, even though they be *prima facie* improbable, worthy of some consideration. It may be observed that the *E. villosa* is the *pilosa* of Linnæus; the *E. palustris* is not indigenous to this country.]

In the month of May, 1843, six men and two bullocks were bitten by a rabid wolf. The men came shortly after to the hospital for assistance, each exhibiting wounds of considerable severity. The surgeon in attendance after cleansing the parts, and touching them with concentrated muriatic acid, ordered them to be bathed in a decoction of the euphorbia. At the same time he caused the patients to take fasting a small wineglassful of a decoction of the roots of the plant, of the strength of 30 grammes to 500 grammes of water. This was continued three or four days, till the medicine ceased to produce either vomiting or purging.

At the end of three weeks from the accident, the bullocks all died with symptoms of rabies, but with the exception of one individual none of the men were attacked, although they all complained of pain in the cicatrix of the wounds.

Four peasants and an infant were bitten by a rabid cat. The child died soon after with all the symptoms of hydrophobia. One of the peasants was likewise attacked, but was saved, as were the other three, by taking a decoction of the roots of the euphorbia palustris upon the recommendation of their parish priest. M. Krebel likewise relates the following case: He was summoned to a woman said to be dying, and whom he found in the last stage of hydrophobia. He made her drink 450 grammes of the tisane of euphorbia at one draught; the patient then fell asleep, and after having been severely purged completely recovered.

## SEC. II. DISEASES OF THE NERVOUS SYSTEM.

ART. 7.—*On the Causes and Prevention of Apoplexy and Paralysis.*  
By MARSHALL HALL, M.D., F.R.S.\*

There is no more delicate or more momentous question in the practice of medicine than that of the prevention of the attacks of apoplexy, hemi-

\* *Practical Observations and Suggestions in Medicine.* 8vo. London, 1845.

plegia, or other paralytic affections. These arise from such different and even opposite causes, that the very course of medicine and regimen which is most conducive to safety in one case, has the opposite tendency in another; wherefore the diagnosis on which our treatment depends requires the utmost care and attention.

There is sometimes a state of plethora, sometimes of anæmia, and in other cases there is neither the one nor the other, but that morbid condition of the system called cachexia, often denoted by boils, carbuncles, &c., with deranged secretions—as the predisposing cause of attacks of paralysis.

Allied to this last condition, is that which obtains in dyspepsia and gout. The imperfect performance of the function of the liver, and especially of the kidneys, is in another class of cases, the cause of these formidable diseases. In other cases there is disease of the heart, or of the minute arteries and veins, or of the capillary vessels of the brain and its membranes.

The attention of physicians has until recently been too much directed to fulness as the general cause of the apoplectic or paralytic attack; and as to the public, they have to this moment only one idea—that a fit denotes fulness; and the practitioner who, on being summoned to such a case, shall brave this opinion, and, depending on his professional knowledge, discard that invariable refuge of the timid and ignorant, the lancet, will make himself responsible for the issue.

[The author, after stating that the real principle upon which an apoplectic seizure is to be prevented, is to induce a state of equilibrium in regard to plethora or inanition, and of health in regard to the general tone, habit, and secretions, proceeds to remark upon each of the conditions to which he before adverted; and first, of :]—

1. *Plethora*. When plethora is the cause of the threatening of apoplexy, the remedy and safety of the patient consists in depletion. How are we to be certain of the fact (of plethora)? There may be the appearance of the sanguineous temperament, an athletic form, &c.; and with all this, there may be headache, vertigo, and other symptoms of head affection. But is it certain that the symptoms in such a case depend upon fulness? If there be, in addition to the symptoms enumerated, a disposition to *doze*, it is nearly so. But in the absence of such symptom, and even with such symptom, may not the real case be indigestion? Certainly; then what is to be done?

There is a [diagnostic] symptom of great value, when it can be clearly ascertained to exist. It is the occurrence of vertigo, first, in the act of stooping, and secondly, in an unusually erect posture, especially when suddenly assumed. But if this be absent, what is then to be done?

There is a resource in such a case, which, in spite of the criticism of a respectable author, I will again venture to assert is of immense value. There is no case in which a patient, if bled from a good orifice, in the erect posture, bears to lose so much blood before syncope takes place, as in that of real congestion of the cerebral vessels; there is no case in which full abstraction of blood is so necessary. On the other hand, in the case of vertigo, and other cerebral symptoms arising from dyspepsia, the patient neither bears the loss of much blood, nor requires it.

In a doubtful case, I propose to adopt this mode of bloodletting, first, as a guard against the undue loss of blood, and secondly, as a means of *diagnosis*, and a prompter of ulterior proceedings. I have adopted this measure so often, and with such satisfactory results, that I cannot recom-

mend it too strongly to my medical brethren. In cases, on the other hand, in which it has not been adopted, I have seen one class of patients become a prey to apoplectic or paralytic seizures, for want of bloodletting, and another affected with headache and vertigo, drained of blood (uselessly) by repeated cupping and leeches.

2. *Anæmia*. I now come to speak of cases in which anæmia has already been induced. This is not a state of immunity even against an attack of paralysis or apoplexy. I constantly see patients who are in jeopardy, not from fulness, but from inanition, and who have been kept in a state of anæmia by bloodletting, general or local, when an opposite treatment is required to restore the equilibrium of the system.

A state of pallor; a disposition to vertigo, faintishness, palpitation; a state of nervous timidity; the recurrence of the symptoms when the stomach is empty, when the bowels are freely moved, or upon looking upwards, or resuming the upright position after stooping or rising from the bed,—such are the diagnostic signs of a state of inanition from that of plethora.

The history of the case is in every respect a great aid in the diagnosis. If depletion has been used, it has been attended with this result—temporary alleviation, with subsequent aggravation of all the symptoms; an opposite mode of treatment, very cautiously adopted, and prudently pursued, involving quinine and iron, confers a more permanent, but less immediate benefit.

The state of anæmia itself is not without danger even of apoplexy or paralysis; the actual effusion of blood having occurred in some instances. Such a case is related by Denman; it occurred in the midst of exhaustion from hemorrhage from uterine polypus. We might, therefore, incautiously bleed our patient into hemiplegia.

3. *Dyspepsia, Cachexia*. I have so often observed symptoms threatening apoplexy in conjunction with symptoms of dyspepsia and cachexia, that I have no doubt of the importance of a strict attention to the subject. One form is the following: vertigo occurs with faintishness, nausea, and cold clammy perspiration; sometimes there is actual sickness and much flatulency. In these cases the liver is torpid, and the urine is apt to deposit lithic acid salts. In no case is the loss of blood repaired with such difficulty. The application of a few leeches sometimes leaves a state of debility and pallor for weeks. The treatment consists in the correction of the secretions, and in giving tone to the system. The compound decoction of aloes, infusion of rhubarb, of gentian, and sarsaparilla, vinum ferri, and the bicarbonate of potash, are the principal remedies; but with these, a mild nutritious diet, a system of gentle exercises, early hours, and a strict attention to the condition of the feet and general surface, should be conjoined.

4. *Gout*. There is frequently a connexion to be traced between gout and its frequent attendant the lithic acid diathesis, and the apoplectic and hemiplegic seizure. The steady perseverance in such remedies as the Decoct. aloes compos., Bicarbonate of potash, &c., have in many cases averted the evil. The Vinum colchici should also be given, in very minute doses, as five drops three times a day, to overcome the specific gouty diathesis.

The lithic acid diathesis is not the only urinary disorder which leads to poplexy and hemiplegia; the attack, as it is well known, occurs in diabetes, and in the case of albuminous urine.

Such are the predisposing causes of apoplexy and paralysis; the prevention must consist in removing them; and, according to circumstances, depletion, iron, sarsaparilla, colchicum, &c., must be prescribed, and steadily persevered in. (pp. 77-86.)

ART. 8.—*On Softening of the Brain.* By M. ROCHOUX.

(*Archives Générales de Médecine*, Nov. 1844.)

[M. Rochoux was one of the first pathologists who drew the attention of the profession to the consideration of cerebral softenings. This he did as long as thirty years ago. The present memoir embodies the results of his subsequent experience. After remarking upon the uncertainty with which the term "ramollissement" is employed, and inculcating the necessity of restricting its application to true pathological changes, he proceeds to the immediate object of his communication, which is to discuss the curability of the lesion. He reduces the cerebral affections which are connected with softening to three classes: the hæmorrhagiparous softening, sanguineous infiltration, and inflammatory softening.]

1. *Hæmorrhagiparous softening.* In this form the texture of the cerebral mass undergoes a gradual molecular alteration, losing its consistence and force of cohesion, until a moment arrives in which its fibres are ruptured by the simple force of the circulating fluid. This, according to M. Rochoux, is the order of events in nineteen out of twenty cases of apoplexy.

To this theory, as the author observes, the objection has been made, that if the effusion of blood were in reality preceded in all cases by this textural change in the brain, this change, being strictly pathological, would be manifested by certain symptoms. To this he replies that a molecular change may go on in any organ of the body, and yet not be declared but by its results. He disposes of another objection to his theory, viz., that apoplectic clots are continually found surrounded by perfectly sound brain, by the statement that, if it be allowed that healthy brain is subject to rupture by the force alone of the circulation, that life would always be liable to extinction from that cause. He believes that the opinion is based upon erroneous observations; and affirms, that if the dissection had been carefully conducted, the truth of his remarks would always be made manifest.

The author next proceeds to describe the process of cure of cerebral softening. In the case of simple erosion, the affected surface cicatrizes gradually in proportion as the effused blood becomes absorbed, and its situation is eventually betrayed by only a slight depression. The obliteration of an apoplectic cyst in the centre of the cerebral mass, is obtained by the gradual approach of its parietes, and an interlacement of cellular and vascular bands from side to side, forming meshes, which contain a red or yellowish gelatiniform serum. The walls of the cavity do not progress beyond this point, and never come into perfect apposition, as stated by Beclard. The opinion of M. Durand Fardel, that this latter appearance is not indicative of the previous existence of a clot, but is the remains of simple softening, is confuted by the author, who affirms, that in proportion to the depth of the red or ochrey shade, so is the certainty of their being the remains of sanguineous effusion.

2. *Sanguineous infiltration.* This form recognizes the same cause as

the former, namely, a molecular change in the part. On this subject the author makes the very important remark, that redness of the medullary substance cannot be considered a sign of inflammation, for inflammation never produces redness of the medullary, and seldom of the cortical portion. When sanguineous infiltration is present, the brain has a dotted appearance, similar to that which is observed in the vicinity of an apoplectic clot. This is the capillary apoplexy of Cuvier.

3. *Inflammatory softening.* The most important character of this lesion is the presence of pus. This may be easily recognized by sight, or by the simple expedient of pouring upon it a stream of water, which washes away the softened portion; an effect which it does not produce in the hemorrhagic form. Whenever redness is observed, it is an indication of extravasation of blood and not of inflammatory softening.

The author concludes by reiterating his belief that of 100 cicatrices found in the brain 98 are due to hemorrhage, and the other 2 to any other lesion rather than "ramollissement."

ART. 9.—*On the Treatment of Epilepsy.* By E. BLACKMORE, M. D.,  
Edinb., Physician to the Bath Penitentiary.

(*Med. Gazette*, March, 1845, p. 725.)

"In all cases, in the paroxysm, whether there be turgescence of the vessels of the head, or pallor and coldness of the face, in the delicate and in the robust, in the recent and in the confirmed disease, the cold affusion is probably the best remedy; if bleeding be practised, it should be far less extensive than in apoplexy; when excessive, it has only been the means of substituting one form of convulsion for another, or of inducing worse consequences. In that form of the disease which is caused by a stroke of lightning, or sun-stroke, or from a large quantity of spirituous liquors taken at a draught, experience shows that the best treatment consists of cold water affusion, followed by an emetic and ammonia, as soon as the power of swallowing has been recovered; bleeding in such cases has been fatal. Besides the cold douche, a clyster of turpentine is alone required in most cases. Compression of the carotids has also been found useful.

"In the intervals of the fits, the most generally curative treatment, in a vast number of cases which I have seen in practice, has been the antiphlogistic, either evacuant or sedative. Small bleedings and cupping, shortly before the period of the return of the paroxysms, has had a most salutary effect; while profuse bleeding has served to make the returns more frequent.

"Purgatives are especially valuable, e. g., elaterium and croton oil. I have given also, with good effect, a scruple dose of calomel. In relaxed habits a combination of colocynth with the gum resin of cornel has succeeded well. The oil of turpentine is a most useful adjunct in these cases to castor oil.

"Emetics, particularly sea-sickness, have appeared safe and wholesome. Drains, such as the issue by incision on the occiput, are of an unquestionable utility in most cases.

"Sedatives, as colchicum and digitalis, have been often successful; but when incautiously given, productive of equal mischief.

"In many cases of chronic epilepsy, the most successful treatment is

not evacuant or sedative, but tonic,—not that tonic plan which fills the vessels with blood, but that which increases their contraction, and equalizes the general circulation. Of this class, the more successful in my experience is turpentine in small repeated doses; the sulphates of copper and zinc, and nitrate of silver, appear to act in a similar manner to turpentine, but not so efficaciously.

“When the fits have usually recurred in the night, the habit has been broken by an opiate given at bed-time, and by the patient being awakened and caused to leave the bed.

“*Concubitus rite et legitime peractus* has proved a remedy, just as its abuse has been one of the worst excitants of the malady.”

ART. 10.—*On the Remedial Powers of Incisions of the Scalp*:—[The long incision of the scalp which, as may be remembered, was introduced by Dr. Wallis, has been for the most part considered so unnecessarily severe, that it has found but few admirers; and since the publication of the paper of the originator of the operation, and of another by Dr. Oke, of Southampton, (*Provin. Med. Jour.*, Sept. 18, 1844,) we do not recollect that its usefulness has met with any corroboration. The proceeding recommended by Dr. Blackmore is of a less formidable character, and will doubtless, be found to be worthy of a portion at least of the eulogium he has accorded to it:—]

“I would urge on the attention of the profession the importance of a remedy which I have lately used several times with considerable success, namely, a deep incision of the scalp, allowing the wound to bleed freely. In spasmodic cases of an encephalic kind, as well as in hemiplegia and mania; when there has been either a fixed pain in the head or a tender portion of the scalp, so that gentle percussion has induced great pain, or a convulsive or an hysterical fit, my experience, so far as it has gone, has proved that the bleeding from a free incision is a far more powerful remedy than any other mode of depletion. This practice should not be confined as formerly to cases of disease in the pericranium, nor should it be adopted merely as a last resource in chronic affections of the brain and its membranes, nor as a first step to the making of the enormous issue lately recommended by some distinguished physicians. The severe extent to which this mode of forming an issue has been carried, may bring an important measure into undeserved neglect. A purulent drain with seventy peas in the scalp would be intolerable to many persons who would readily submit to a cut three inches in length, and a turpentine dressing for a few days. My attention was called to this measure by (the late) Dr. Abercrombie, who had long used it with great success in cases where with symptoms of internal disease some portion of the scalp had become tender. I would submit, however, that it should not be restricted to such a condition, and that it might be extensively employed as a most efficient means of local bleeding.”

*Medical Gazette*, March, 1845, p. 728.

ART. 10.—*Treatment of Neuralgia by Narcotic Inoculation applied to the Nerve*. By Mr. RYMP.

(*Dublin Medical Press*, March 19th, 1845.)

[Two cases, which we extract verbally from the Reports of the Meath County Hospital, afford us a useful suggestion in those rebellious neu-



ralgic affections which too frequently baffle the best-devised system of internal medication :]—

"Margaret Cox, æt. 59, of spare habit, was admitted into the hospital, May 18th, 1844, complaining of acute pain over the entire left side of the face, particularly in the left supra-orbital region, shooting into the eye, along the branches of the portio dura (?) in the cheek, along the gums of both upper and lower jaw, much increased in this situation by shutting the mouth and pressing her teeth close together, and occasionally darting to the opposite side of the face, and to the top and back of her head. She states that about six years ago she fell from a wall, and, in the act of falling, a stone struck her in the temple; that twelve months after this she was much exposed to cold, and one night was suddenly seized with the most agonizing pain in the situations above described. 'She thought her eye was being torn out of her head,' and her cheek from her face; it lasted about two hours, and then suddenly disappeared on taking a mouthful of ice. She had not had any return for three months, when it came back even worse than before, quite suddenly, one night on going out of a warm room into the cold air. On this attack she was seized with chilliness, shivering, and slight nausea; the left eye lachrymated profusely, and became red with pain; it went in darts through her whole head, face, and mouth, and the paroxysm lasted for three weeks, during which time she never slept. She was bled and blistered, and took opium for it, but without relief. It continued coming at irregular intervals, but each time generally more intense in character, until at last, weary of her existence, she came to Dublin for relief.

"She had been salivated three times, and had been so much in the habit of taking laudanum that latterly half a drachm, three times in the day, had no effect in lulling the pain, and was the quantity she commonly took. She was a miserable sallow-complexioned looking creature, had been sleepless for months, and her face was furrowed with constant pain.

"On the 3d of June a solution of fifteen grains of acetate of morphia, dissolved in one drachm of creosote, was introduced to the supra-orbital nerve, and along the course of the temporal, malar, and buccal nerves, by four punctures of an instrument made for the purpose. In the space of a minute all pain (except that caused by the operation, which was very slight,) had ceased, and she slept better that night than she had done for months. After the interval of a week she had slight return of pain in the gums of both upper and under jaw. The fluid was again introduced by two punctures made in the gum of each jaw, and the pain disappeared. After this the pain did not recur, and she was detained in hospital for some weeks, during which time her health improved, her sleep was restored, and she became quite a happy looking person. She left the hospital on the 1st of August in high spirits, and promised to return if she ever felt the slightest pain again. We conclude she continues well, for we have not heard from her since."

Case II.—"R. Dolon, æt. 28, a thin spare man of middle stature, was admitted into hospital 9th September, 1844, and came under Mr. Rynd's care on the 10th November, complaining of acute pain in the right hip, thigh, and leg, to the sole of the foot, along the entire course of the sciatic nerve and its branches, but chiefly in the main trunk of the nerve. He is unable to sleep from the pain, and quite unable to walk. He is much emaciated, and the muscles of the limb are attenuated and wasted. He

has been ill for three years, during which time he has been almost always confined to bed. He has been frequently treated for the disease with calomel, to produce salivation, cupping, blistering, leeching, &c., all without any salutary effect. Exposure to cold and wet is assigned as the cause of the disease.

"On the 13th of November the fluid was introduced, ten grains acetate morphine to the drachm of creosote by one puncture behind the trochanter, and one half-way down the thigh. He was instantly relieved from pain, and walked steadily through the ward without any pain or difficulty; before, walking increased the pain. For about half an hour after the operation he felt uneasiness from the puncture.

"16th. Says he is perfectly well in the thigh, and feels only a slight pain in the course of the anterior tibial nerve. The fluid was again introduced to-day to the seat of pain by two punctures; it disappeared as before.

"29th. Says he is perfectly well; has walked every day since; has slight stiffness in the knee from previous want of use.

"Ordered,—Camphorated oil to rub the knee with.

"December 15th. Left hospital to-day, saying he felt perfectly free from all pain and uneasiness.

"February 6th. He walked up to Dublin to-day, (twenty miles,) and says that since the last operation, on the 16th of November, he has never felt his old pain, and is perfectly well."

ART. 11.—*On the Treatment of Neuralgia by Tobacco*.—After curing two cases of neuralgia by an infusion of Tobacco, Mr. Chippendale, for convenience of application, devised an ointment which is made as follows:—Take of the best shag tobacco four ounces; distilled water two pints, boil for two or three hours, strain, and then wash the tobacco in two pints more of boiling water, strain a second time, and add it to the former liquor; then evaporate to the consistence of an extract. One part of the extract is added to seven parts of simple cerate to form an ointment.

*Lancet*, March 1, 1845.

### SECT. III. DISEASES OF THE RESPIRATORY SYSTEM.

#### ART. 12.—*On the Pathology of Phthisis Pulmonalis*.

By S. EVANS, M.D., Physician to the Jarvis-street Hospital, &c., Dublin.\*

[The following observations occur in a work recently published upon the fruitful theme of consumption, which is remarkable for the enunciation of several startling innovations upon our recognized notions of the pathology of the disease. The author thus expresses the conclusions to which he has arrived:—]

1. That phthisis pulmonalis is a disease characterized by deficient force of growth, together with symptoms, both local and general, of active pulmonary congestion.

2. That the preponderance of the white tissues in this disease is due to a diminished force of growth, whereby the tissues generally, but the red

\* Lectures on Pulmonary Phthisis. 8vo. Dublin, 1845.

in particular, are rendered incapable of attracting from the blood their normal quantity of aliment, and by which their power of resisting the decomposing influences of external agencies is diminished.

3. That the diminution of the force of growth depends upon abstraction of the natural stimuli and aliment: for example, want of heat, air, light, oxygen in the blood, &c., and the food being insufficient and innutritious.

4. That the active pulmonary congestion may display itself in the form of bronchitis, hemoptysis, or pneumonia.

5. That the symptoms of active pulmonary congestion in this case, are hectic fever, emaciation, catarrh, cough, altered voice, together with derangement of the digestive and uterine functions.

6. That the same causes which produce the symptoms of phthisis, are likewise apt to produce the secretion of what is called tubercle.

7. That the parts of organs which have secreted tubercle, are subsequently disposed to ulcerate and suppurate, and the tubercle, at the same time, to soften in part into a fluid similar to pus.

8. That abscesses, formed by the softening of the tubercles, and the ulceration and suppuration of surrounding parts, are subject to the ordinary laws of abscess, viz., burrowing to, and bursting from, the surface which presents the least resistance, following the least organized track in their fistulous course and cicatrizing by means of a lining membrane.

9. *That the existence of tubercles is not signalized by symptoms, nor their absence a cause of amelioration in disease.\**

10. That the presence of tubercles never causes inflammation in the surrounding tissues.

11. That hemoptysis when profuse, may be the cause of the diminished growth, and pulmonary irritation of phthisis. (p. 32.)

ART. 13.—*On Counter-irritation in Phthisis*.—[Dr. Evans having in early life been connected with the notorious St. John Long, possessed the most extensive opportunities of testing the value of stimulating liniments, &c., in phthisis pulmonalis. Contrary to what might have been expected, the author, who has since spent several years in the diligent study and practice of the profession, is inclined to think that the value of this means of treatment is much underrated, and that the fatal consequences which so often occurred under the hands of the charlatan were due to his want of discrimination in the application of his heroic frictions, and not to their inherent unsuitableness to the nature of the disease. After explaining the principles upon which the beneficial effects of counter-irritation are founded, the author thus proceeds:—]

“To diminish by proper means the original irritation, and to stimulate some other part where a secondary irritation exists. That this may become more energetic than the original, taking care that this new seat of disease shall be so far distant from the first, that the primary irritation may not be increased by the contiguity of the second; these are the chief elements that you have to bear in mind in the employment of the remedy. To effect these purposes, you ought, in the first place, to use such local and general depletion as circumstances may require, together with those contra-stimulants which are best calculated to diminish irritation; and having in this manner reduced the original irritation, you can convert it

\* [The italics are our own —Ed.]

into a more secondary affection, by exciting a more severe inflammation elsewhere. Then it will follow the ordinary laws of secondary irritations, and gradually disappear in proportion as what is now the principal disease progresses towards cure.

"It is in consequence of the neglect of these principles that counter-irritation so often fails. Recollect, therefore, that unless you can produce a *greater irritation* on the surface than that which exists internally, you will only do mischief by applying a stimulus to the skin."

[The author prefers a liniment composed of vinegar and spirits of turpentine, croton oil, or the ointment of tartrate of antimony, and particularly urges the necessity of applying the liniment extensively, which was the secret, as the author states, of the undoubted success in many cases, of St. John Long.]

*Ibid.* p. 139.

**ART. 14.—On the frequent spontaneous Cure of Pulmonary Consumption, and the indications furnished by Pathology for its rational treatment.**  
By D. H. BENNETT, M.D., F.R.S.E., &c.

(*Edin. Med. and Surg. Journal*, April, 1845, p. 406.)

[The experience of every day tends more and more to the belief that, although we are not as yet able so to arrange our remedial agents as to bring about so desirable an event in a given case, the cure of pulmonary tubercles is not by any means so rare as is generally supposed. Pathological examinations continually reveal appearances which can only be referred to the former existence of tubercular deposit, and which no symptoms during life had given reason to suspect. The present paper, from the pen of a gentleman already favorably known to the profession, is an endeavour to deduce a rational mode of treatment from what appears to be the proceedings of nature in certain cases; and under the conviction that it is only by philosophical investigation, such as the present, and not by the charlatanerie with which every honorable mind has lately been disgusted, that we shall ever advance towards the successful treatment of phthisis, we shall condense the following paper as little as is consistent with the plan of this work.]

Every one who has been much accustomed to make post-mortem examinations, must occasionally have noticed puckerings or contractions in the substance of the lungs, sometimes conjoined externally with white cicatrices, sometimes with crataceous or calcareous concretions. It is certain, from the frequency with which these appearances are met with, that, if they indicate the previous existence of tubercle, this lesion must not only heal spontaneously in a few cases, but must be a very frequent occurrence. This will appear to be the case from the following statement :—

Of 73 bodies which the author examined since last November, he found puckerings or concretions in 28: in 12 of these, induration alone coexisted; in 16, calcareous concretions were also present.

In 100 bodies examined by M. Rogee,\* at the Salpêtrière, these lesions were discovered in 51, or more than half. M. Boudet† also states, that of 135 bodies examined by him, he found them in 116, or in about four-fifths of the whole.

\* Archives Générales de Médecine, vol. v. 1839. † Comptes Rendus, tom. vi. 1843.

In the 28 cases first alluded to, 3 were of the age of 18; 6 between that age and 40; and 19 above the latter age. There can be little doubt that they are most common in elderly individuals who have escaped the diseases incidental to youth.

It may be well, before we proceed further, to inquire whether the lesions now alluded to, are really proofs of cured tubercular deposits in the lungs. This seems to be established by the following facts:—

1. A form of indurated and circumscribed tubercle is frequently met with, gritty to the touch, which, when dried, closely resembles cretaceous concretions.

2. The concretions are found exactly in the same site as tubercle; they are most common in the apex, in both lungs.

3. When a lung is the seat of tubercular infiltration throughout—recent tubercle occupying the inferior portion, and older tubercle, and perhaps caverns, the superior—the cretaceous and calcareous concretions will be found at the apex.

4. A comparison of the opposite lungs will frequently show, that whilst on one side there is firm encysted tubercle, partly transformed into cretaceous matter, that on the other the transformation is perfect.

5. The puckerings found without these concretions exactly resemble those in which the latter exist. Moreover, whilst puckerings with gray induration may be found in the apex of one lung, a puckering surrounding a concretion may be found in the apex of the other.

6. The seat of cicatrices admits of the same exceptions as the seat of tubercles. In one case the author found the puckerings in the inferior lobe only; he has also met with three cases in which the lower lobe was densely infiltrated with tubercle, the superior being only slightly affected.

Hitherto these lesions have been considered as occurring very seldom. Laennec only records six cases; Andral, eight; and various writers have published isolated cases as remarkable for their rarity. Dr. Williams\* speaks of these appearances as *now* and *then* and *sometimes* occurring. Such is the general belief.

On the other hand, the observations of Rogee and Boudet, confirmed by those of the author, will probably serve to show that this spontaneous cure of tubercle has occurred in from one third to one half of all who die after forty.

This result may with some excite surprise as being contrary to the prevailing opinion; but it is easy to show that there is nothing in the chemical constitution of tubercle which differs from lymph in the early stages, only in containing more albumen, and as the latter forms a superabundance of earthy salts,—that should in any way oppose the facts revealed by morbid anatomy.

Tubercle is not malignant. Gulliver and Vogel, it is true, have described it as composed of nucleated cells, but, after careful examination, the author has never been able to discover such a formation. On this point the observations of Lebert more nearly agree with those of the author, which have always shown that tubercle is composed of granulae, and corpuscles of irregular shape, difficult to be described, but easily recognized by an experienced eye.

Then with regard to the action upon which tubercular deposition depends,

\* Diseases of the Chest, 4th Edit. p. 192.

two opinions have been contended for. By some, it is maintained to be a constitutional disease; by others, to be the product of inflammation. Great names are ranged on either side. A moment's consideration will show that the whole discussion turns upon what is meant by inflammation. If by that term be understood pain, heat, redness, &c., then tubercle is not inflammatory. If, on the other hand, we consider that the essential phenomenon of inflammation is an increased exudation of blood-plasma, then tubercle must be regarded as an inflammatory product.

What then, we ask, constitutes the difference between the products of ordinary inflammation and tubercle? It is the comparatively inorganizable power of the latter. In tubercle, we have granules and imperfect cells; in the products of healthy inflammation, we have granules and perfect cells. Both these morbid products are formed by the exudation of the blood-plasma. If it undergoes transformation into perfect organism, it constitutes what pathologists have in some cases called the results of inflammation, in others, different kinds of tumours. If the transformation be arrested or rendered imperfect, it forms what has been called tubercle or scrofulous deposits. The essential distinction, then, between the products of inflammation and tubercle, must be sought for in a difference of composition (chemical and vital) of the blood-plasma. Hitherto chemistry has not taught us in what this difference consists, but has pointed out the probability of its consisting of some form of proteine less capable of organization than fibrine. The deficiency of organization is readily seen under the microscope.

The fact, then, of the frequent spontaneous cure of tubercle may be admitted. Laennec, Andral, Cruveilhier, Rogee, Boudet, &c., have each published cases where all the physical signs of the disease, even in its advanced stage, have existed, the patient, nevertheless, dying after many years of another disorder, and in which puckerings and concretions were found after death. Boudet states that in one year he met with fourteen cases where softening of tubercular matter in a cavern was evident, all traces of which subsequently disappeared. So deeply rooted, however, is the opinion of the necessarily fatal nature of this disease, that, simply, because recovery has taken place in certain cases, medical men have rather mistrusted their own diagnosis, than ventured to oppose a dogma of universal belief.

The treatment of pulmonary consumption has for the most part been empirical: one remedy after another has failed, because no one remedy can be of use in a disease which, from its commencement to its termination presents such different characters and indications. These characters and indications are only to be ascertained by a practised auscultator, and the signs which guide his practice are totally inapplicable to others who cannot distinguish them. Empirical means having failed to accomplish a cure, perhaps a study of the method in which nature operates may be more successful. The facts which have been brought forward at various times hold out every encouragement for prosecuting a rational treatment of the disease, based on its general pathology. For this purpose, a knowledge of the progressive march of tubercular depositions, is of primary importance.

At first, tubercle is deposited in a fluid state from the capillaries, in the same manner as lymph. The milary and infiltrated forms, whether gray or yellow, after a time soften—a process which may commence at any part of the mass and gradually involve the whole. The parenchyma of the

but slight means of diagnosis. Hemoptysis is an exceedingly rare symptom in infantile phthisis, as has been remarked by Sir J. Clark and Rilliez and Barthez; in the author's practice it occurred only five times in one hundred and twelve cases. This point offers a striking contrast to the case of the adult, in which, according to Louis, it is present twice out of three times.

**Diagnosis.** Allusion has already been made to the uncertainty of the diagnosis in many cases of infantile consumption. It is sometimes extremely difficult to distinguish it from lobular pneumonia, and we shall frequently have to wait before we shall be able to decide whether the symptoms depend upon ordinary pneumonia, or that insidious form which is accompanied by tubercle and tubercular infiltration. The main points of difference, as pointed out by Rilliez and Barthez are, 1st, their progress and duration: lobular pneumonia generally extends to the neighbouring portions of the lungs in a few days, and its signs become more positive, while those of tubercle continue stationary for a much longer period. 2. The period at which bronchial respiration occurs; in simple pneumonia being at an early stage, in tubercle at a more advanced one. 3. The seat of the bronchial respiration; in tubercular diseases frequently at the summit of the lung; in lobular pneumonia, more often in the middle or lower lobes.

The bronchial glands are implicated in a great majority of cases of infantile consumption (in 100 out of 112 cases). In a few of these cases only were the glands sufficiently enlarged to give rise to symptoms through their mechanical effects, or by communicating with caverns in the lungs or bronchi. To such cases only should the term *Bronchial Phthisis* be applied. Thus understood, this form of phthisis is peculiar to children but is not so common an occurrence as has been supposed.

The symptoms of tuberculated bronchial glands are mainly mechanical. The aorta, pulmonary artery, vena cava, &c., may be compressed, and the flow of blood more or less impeded. Hence may arise pulmonary apoplexy, and effusion of serum. When the lower part of the trachea is compressed, MM. Rilliez and Barthez have noticed a loud persistent sonorous rale. In other cases an intermittent feebleness of respiratory murmur is observed.

Pressure on the eighth pair produces a peculiar modification, sometimes amounting to complete extinction of the voice. The cough in such cases closely resembles that of whooping-cough.

The *diagnosis* of this form of phthisis in children must be founded on the preceding peculiarities in the progress and history of the symptoms. Whenever a child presents several of the rational signs of consumption, without our being able to detect the presence of tubercles in the lungs or abdomen, we have good reason to suspect that the bronchial glands are affected. As long as the case continues to present this simple aspect, we cannot go beyond suspicion; but it rarely happens that the glands acquire a considerable degree of development, without acting upon the neighbouring tissues. As these become successively involved, we have a series of varying symptoms, which could not arise from any other source. The eyelid becomes œdematous, and in proportion as the vena cava is compressed, the œdema extends to the whole face, which is either pale or livid. The characters of the cough and voice have already been mentioned; but we may state in addition that the child is liable to attacks of suffocative dyspnoea.

The physical signs are loud sonorous rale, either persistent, or replaced by other anomalous sounds. When these symptoms are superadded to the rational signs of phthisis, we can have little hesitation in deciding that they arise from tubercular enlargement of the bronchial glands.

*Treatment.* Upon this point the author has little to offer. He however makes the remark that in children the emetic treatment should not be adopted, lest irritation of the abdominal viscera hasten the deposit of tubercle in the abdomen, to which the patients are already too prone. As a general rule, he considers the prognosis, under favorable circumstances, more encouraging than in the adult.

ART. 16.—*On the Operation of Paracentesis Thoracis.*

BY HAMILTON ROE, M.D. OXON. Physician to the Westminster Hospital, &c.  
(*Medico-Chirurgical Transactions*, Vol. xxvii. 1844.)

The operation of tapping the chest in chronic pleurisy and hydrothorax has long been a fruitful theme of discussion. The balance of opinion has in general been unfavorable to it as regards the cure of the diseases for which it is recommended, but the support of such names as Larrey, Frank, Bell, Williams, Copland, &c., may fairly be adduced as a reason for a dispassionate inquiry into its real merits. Such an inquiry we find in a paper read before the Medico-Chirurgical Society by Dr. Hamilton Roe, which, as it is replete with practical information, we shall endeavour to condense for the benefit of such of our readers as have not access to the original.

The author opens his communication by an examination of the principal objections which have from time to time been urged against the operation. One of these is, that it frequently induces dangerous syncope; that it is of little use in peritoneal effusions, and therefore by analogy cannot be of more service in effusions into the pleura; and that as it does not cure the inflammation which gives rise to the effusion, no object is attained by merely removing the fluid. In answer to this, the author replies that in thirty-nine cases, which he gives in a tabular form, syncope did not occur once; that the observations respecting peritoneal dropsy is false, and that the operation is not recommended until inflammatory symptoms have ceased.

Another objection, and one which has the support of many great names, is, that the admission of air into the cavity of the chest gives rise to dangerous and frequently fatal symptoms. Dr. Roe decides this objection also to be without weight, for in every case which has fallen under his observation, "a considerable quantity of air entered into the pleura during the operation, and in some of them so freely, as to excite all the physical signs of pneumothorax, but in none of them did it produce any permanently evil effect; in one instance only did it cause even temporary inconvenience."

The last objection noticed by the author, is, that the operation is unnecessary, as all cases really curable are curable without paracentesis. This was the opinion of the late Dr. Hope, founded upon the analysis of thirty-five cases. In answer to this the author inquires what is meant by cure. If by it is meant not only the removal of the fluid but the return of the lung to its normal state, he denies the power of internal medicines. The objection is also untenable for the reason that the operation is not proposed



until the failure of medicines, the principal of which is mercury, points out the necessity for some ulterior proceeding. To spend much time in the endeavour to promote absorption when the process appears to be tardy in making its appearance, is injurious to the patient, as it allows the lungs and pleuræ to undergo those irremediable changes which render their restoration impossible. For these reasons Dr. Roe observes that less harm is inflicted by tapping than by the sole reliance upon internal medicines.

The objections, therefore, to paracentesis are reduced to this; that it inflicts a wound; whilst in favour of it, it may be said that in empyema it at once removes a noxious fluid, and by its early adoption prevents the irremediable changes above noticed.

Having disposed of the objections which are ordinarily brought forward by the opponents of paracentesis, the author in the next place proceeds to point out the forms of disease to which it is applicable, and the indications for its performance.

The term empyema is limited by him to those cases in which the contents of the pleural sac are purulent; hydrothorax being applied to serous effusion whether inflammatory or consecutive to disease of other organs. In empyema the operation is indicated in those cases which do not yield quickly to ordinary treatment, and its advantage is shown by the proceedings which nature sometimes adopts in similar cases. When the fluid is once clearly ascertained to be purulent, the operation should be performed without loss of time.

In serous effusions, in which the life of the patient is threatened by the rapid accumulation of fluid, paracentesis is admitted to be the only remedy. It will also be frequently necessary in serous effusions occurring in scrofulous habits, in which the necessary treatment has either failed or been neglected. In mechanical hydrothorax the operation is only palliative, as the cause of the effusion being organic, it is impossible to prevent its re-accumulation.

In order that the operation should have the greatest possible chances of success, it is indispensably necessary that it should be employed before either the constitutional powers of the patient are too much reduced, or the thoracic viscera have undergone irremediable organic changes, for in the former case the absorbents cease to perform their functions, and therefore cannot prevent the re-accumulation of the fluid; and in the latter a cure is impossible for the lung being condensed by the pressure of the fluid, and bound down by adhesions, cannot re-expand. In respect of the necessity for performing the operation early in order to ensure success, paracentesis resembles many other operations, such as laryngotomy, the operation for strangulated hernia, &c.

It would be very desirable to fix, if possible, the precise period beyond which the operation ought not to be delayed. There can be no doubt that it should be before the changes in the lung have taken place, but the exact point of time is not easily determined. Dr. Roe considers that the operation should be performed as soon as the acute symptoms of pleurisy have subsided, which, as a general rule, he thinks, happens within three weeks from the commencement. The exploring needle will be found a most valuable instrument in determining the nature of the effusion previous to the tapping.

**The Operation.** Some difference of opinion exists as to the manner in

which the operation should be performed, and the quantity of fluid which should be evacuated at one time. Formerly an incision was made into one of the intercostal spaces, the fluid was evacuated at once, and the wound was left open. More recently the opening into the pleura has been made with a trochar, the wound being kept open or closed immediately. The two former modes are objectionable, as it allows the admission of air, which, though, as before stated, it is not immediately injurious, may become so by constant ingress. In the cases alluded to in the table, the opening was made with the trochar, and closed immediately after the evacuation of the whole of the fluid, and if it re-accumulated the operation was repeated. This Dr. Roe looks upon as the best mode of proceeding.

In the twenty-four cases witnessed by Dr. Roe, the opening was made as recommended by Laennec, in the space between the fifth and sixth ribs, a little posterior to the digitation of the serratus magnus. The skin being previously drawn downwards so as to make the opening valvular, a deep incision was made, and a sharp trochar and canula were afterwards passed inwards and upwards with sufficient force to puncture the pleura. Any inflammatory symptoms which might arise were combated by extensive dry cupping, and the internal administration of small doses of mercury.

*Diagnosis of pleuritic effusion.* Cases are on record in which the sound side has been tapped instead of the diseased one, to the certain destruction of the patient, by the production of pneumothorax on the side opposite to the one containing the effusion. Such a mistake in the present day would be unpardonable, as effusion in any quantity ought to be readily recognized even by the inexperienced auscultator. When however the fluid exists in small quantity, it may be overlooked from the following causes:—the fluid as a matter of course gravitates to the most depending portion of the chest, and therefore on the left side, may be obscured by resonance given out by a distended stomach, and on the right may be mistaken for the liver, if the dull sound on percussion alone be taken as a guide. The former difficulty may be cleared up by percussing lightly over the suspected effusion, by which means the resonance of the stomach will not be elicited. The mistake on the right side can only be rectified by the possession of an accurate knowledge of the exact height to which the liver rises.

Dr. Roe mentions, as a valuable diagnostic sign in addition to dulness on percussion, a marked degree of fulness, or even protrusion, of the infra-clavicular space in the affected side. He does not consider bulging of the intercostal spaces so conclusive and invariable a sign of copious effusion as has been generally imagined, especially in serous effusion, although it is more constant when the contents of the chest are purulent, and is therefore more indicative of the quality than the quantity of fluid. The absence of the vibratory thrill, and the posture assumed by the patient are both estimated by the author at their proper value.

The author, in concluding his valuable paper, inserts a table of twenty-four cases which occurred immediately under his own inspection, and which certainly place the operation in a very favorable light. Of these eighteen recovered and six died; but this, as observed by the author, was a greater mortality than can be fairly laid to the charge of the operation, as one was from phthisis, another from pneumothorax, and a third from consecutive hydrothorax, in which of course the operation could only be regarded as palliative. Upon these considerations the author believes himself justified

in stating, "that the operation is not more dangerous than any other which is performed upon the human body, and that the evil consequences supposed to attend it are imaginary rather than real, inasmuch as it was not only not fatal in one out of twenty-four cases, but did not produce even temporary inconvenience in any."

[A case is related by Dr. Thompson in the same volume, in which the operation of paracentesis was performed four times, and eventually with perfect success. The patient was a boy six years of age. Dr. Thompson advises the valvular opening, and the partial removal of the contents, especially when the discharge is purulent. He justly condemns the practice of leaving in the canula, which, as in a case related by Dr. Stroud, (*Med. Quart. Review*) is capable of converting a serous into a purulent effusion.]

#### ART. 17.—*On Iodide of Potassium in the Third Stage of Pneumonia.*

(*Philadelphia Exam. and Lancet*, Feb. 1, 1845.)

[Dr. Upshur states that he has administered the above remedy with remarkable success in many cases of pneumonia advanced to the third stage. He has found its use indicated :]—

1. In pneumonia occurring in anemic persons, where the disease is characterized in its early stages by typhoid symptoms. 2. In cases where inflammatory action, in the commencement high, has been reduced by antiphlogistic treatment and the suppurative stage is just beginning. This stage is easily recognized by a sudden depression of the vital powers, by a soft irritable pulse, and by bronchial respiration being accompanied by rough mucous rhonchi. 3. In those cases which are grafted on long continued intermittents, which have left the blood in a great degree impoverished.

### SECT. IV. DISEASES OF THE CIRCULATING SYSTEM.

ART. 18.—*On the Treatment of Asphyxia.* By S. E. ERICHSEN, Lecturer on General Anatomy and Physiology at the Westminster Hospital.

(*Concluded from Ed. Med. and Sur. Jour.*, Jan. 1845, pp. 32-56.)

[The author, at the conclusion of a most able experimental Report upon the interesting subject of suspended animation, remarks as the result of his investigations, that one of the chief causes of the suspension of the circulation is the obstacle offered to the passage of the blood through the lungs, consequent upon the cessation of its arterialization, and the arrest of the respiratory movements; and that the contractions of the heart cease, and the functions of the brain and nervous centres become suspended, in consequence of the circulation of unoxxygenized blood.]

The first object, therefore, should be to restore the arterialization of the blood, and the second to restore and maintain the heart's action, and thus cause the freshly aerated blood to circulate through the nervous centres; thus stimulating the functions of the *medulla oblongata* and nerves of re-

spiration, by which the respiratory movements will in their turn be properly maintained.

In order to render the subject as clear as possible, the author divides the cases of suspended animation, into two very obvious groups :—

I. Those in which the action of the heart still continues, however feebly.

II. Those in which the action of the heart has ceased.

There is much misapprehension as to the length of time during which a person may be deprived of the power of breathing, as in submersion, and yet be saved. We occasionally hear loose statements to the effect, that life has been restored after ten and fifteen minutes' suspension of respiration, but it may be affirmed upon the best authority—that of the surgeon of the Royal Humane Society, that no cases have been saved which have been more than *four minutes* under water.

The means generally employed by the above-mentioned society for the restoration of the first class of cases consists in clearing the nose and mouth from obstruction; the application of heat by means of a bath at 100 degrees; the employment of brisk friction, and the application of the fumes of ammonia to the nostrils. In addition to this, Mr. Erichsen advises the sprinkling or dashing of cold water upon the face while the body is in the bath, for the purpose of exciting reflex respiratory movements. The lungs should at the same time be inflated by compressing the abdominal and thoracic walls strongly, and allowing them to recover their natural dimensions by their innate resiliency.

In the treatment of the second class of cases, in which the body is cold and the vessels are constricted, the first indication is naturally that of the application of warmth. But, says Mr. Erichsen, here two questions present themselves *in limine* :—

1st. What temperature is it advisable to employ ?

2d. How is the warmth to be employed ?

The Royal Humane Society recommend a bath of the temperature of 95° or 100°; but as Mr. Erichsen justly observes, allowance ought to be made for the season of the year in which the immersion takes place; that temperature would not, as the observations of M. Edwards demonstrate, be safe in the winter when the temperature of the water in which the individual has been immersed is but little above thirty-two degrees. In this case the author recommends that at first the heat applied should not be greater than eighty-five or ninety degrees.

The next subject for consideration is an equally important one, viz., the nature of the medium through which the heat should be applied. The ordinary, because the readiest method, is the warm bath; but on this point the author agrees with Drs. Kay and Carpenter, that there is room for serious objection, as it is opposed to two well-known physiological facts, namely, that the integument even in man acts as a respiratory organ, and that the direct influence of air upon it acts as an excitor to respiratory movements. On these grounds, therefore the author prefers the application of warmth by means of the *hot-air* bath.

Much difference of opinion exists as to the exact value of artificial respiration, and the best mode of applying it. Haller, Hunter, Goodwin, Coleman, Bichat, Kay, Carpenter, and, indeed, almost every writer on asphyxia, have insisted on the paramount importance of supplying the blood in the pulmonary vessels with oxygen as quickly as possible. On the other hand,

Sir B. Brodie, Mr. Dalrymple, and Mr. Woolley, have countenanced the discontinuance of artificial respiration in many cases in which it used to be employed.

In this divided state of opinion between men equally worthy of consideration, it will be useful to examine the subject somewhat in detail, and more particularly in regard to the following questions:—

1st. Can artificial respiration re-establish the circulation through the lungs after it has entirely ceased?

2d. Can it re-excite the contractions of the heart after they have entirely ceased?

That the first question can be answered in the affirmative, is determined by Mr. Erichsen by direct experiment, in which artificial respiration was not commenced until thirty-seven minutes and a half after the ventricles had ceased to beat, but the blood, nevertheless, became rapidly oxygenized and passed freely into the left side of the heart. In this experiment, moreover, seventy-two minutes had elapsed after the closure of the trachea.

The second question is answered in the negative by the author in these words, "I can most distinctly state that I have never in any one instance been able by inflation of atmospheric air, to restore the contractions of the ventricles if they have once fairly ceased, notwithstanding that the blood in the pulmonary veins and left auricle became florid in a few minutes."

But although artificial respiration fails to re-excite ventricular contractions after they have ceased, are we on that account to discard its employment in asphyxia? The author thinks not, for if such direct means will not succeed, neither will the more indirect methods of warmth, friction, &c. The value, however, of artificial respiration, entirely depends upon the manner in which it is employed. How then ought it to be accomplished? Inflation by the mouth is objectionable, as it distends the lungs with air already charged with carbonic acid. The bellows, if properly used, are very useful instruments for the purpose, especially if provided with nostril tubes. But the safest, and at the same time a very effectual mode of introducing pure air into the lungs, is either by the means of the split sheet, as recommended by Leroy and Dalrymple, or else by alternately compressing the chest and abdomen, and allowing the former to expand by its own resiliency. The last mode has the advantage of closely imitating the natural process.

[It appears from the foregoing remarks, that in those cases of asphyxia, in which the heart's action has completely ceased, there is but little hope of restoring its contractions either by artificial inflation of atmospheric air, and *a fortiori*, not by friction, warmth, &c., alone. Are we then, supposing a person has been under water longer than four minutes, to leave him to his fate? The author very properly observes that some attempt at resuscitation should be made even in the most unpromising cases, and suggests that pure oxygen should be used instead of atmospheric air.]

Should symptoms of secondary asphyxia, such as stupor, laborious respiration, dilatation of the pupils, and convulsions manifest themselves, artificial respiration should be immediately resumed, until the action of the heart has been fully restored. In these cases, the author recommends slight electric shocks to be passed through the base of the brain and upper part of the spinal cord, so as to stimulate the respiratory tracts.

ART. 19.—*Clinical Remarks on the Diseases of the Heart.*

By O'B. BELLINGHAM, M. D., Physician to the St. Vincent's Hospital.

*(Dublin Medical Press, February, March, April, 1845.)*

*On the causes of valvular disease.* We have seen, in speaking of endocarditis and pericarditis, how often disease of the valves can be traced to an attack of acute rheumatism—indeed, many of the worst cases of valvular disease which we meet in hospital have their origin in this way; the accompanying inflammation of the endocardium having been overlooked at its outset, or detected only when irreparable injury had been inflicted upon the valves.

By some pathologists all the changes which occur in the valves and orifices of the heart are regarded as the result of inflammation; no doubt valvular disease very often arises from this cause, but to lay it down as a general rule that the alterations which we find in these parts are the result solely of inflammation of the endocardium, whether acute or chronic, is to take a much too exclusive view.

We have already sufficiently explained the manner in which the valves become diseased as the result of inflammation of the lining membrane of the heart; it remains now to notice some other causes capable of producing valvular disease.

Anything which excites the circulation, and keeps up increased action of the heart for a length of time, may prove a cause of valvular disease. It is evident that when the heart's action becomes stronger than natural, the valves have to support additional weight, or to bear increased pressure; and when the action of the organ besides being increased, is quickened, the valves have to bear this additional strain more frequently. Now, increased action in any part generally leads to increased nutrition, and the fibrous tissue of the valves may thus become thickened, which thickening may ultimately terminate in cartilaginous or osseous degeneration. It is in this way that intemperance, on the one hand, and violent exercise or strong mental emotion on the other, by hurrying the circulation, tend to develop valvular disease; though, probably, the latter do so only in persons who are in some measure predisposed to it. Hypertrophy of the muscular tissue of the heart obviously may, for the same reasons, become a cause of valvular disease; and even nervous palpitation itself may ultimately develop valvular disease, though this has been denied. But if the accessions of palpitation are frequent and violent, undoubtedly hypertrophy, dilatation, or valvular disease might be the result. Here, as in the other cases mentioned, there is in the first instance an additional stress upon the valves, and they have to bear this more frequently than in health. Now, the muscular tissue of the heart may increase in thickness in order to meet this, or the frequent distension of the cavities may occasion dilatation, or the valves themselves may suffer. The knowledge of the fact that a case, which at first was one simply of nervous palpitation, might end in organic disease, should suggest caution in giving a very decided opinion, as the patient will be very apt to suspect that his disease had been so from the commencement, and that you had failed to detect it.

Valvular disease is also occasionally the result of congenital malformation; we have seen, in speaking of the morbid alterations found in these parts, that a cribriform condition of the semilunar valves of the aorta or

pulmonary artery is by no means rare ; such a state of these valves must necessarily permit regurgitation, and may ultimately have the same injurious effects upon the heart as are found to follow other lesions of the valves."

*On the Physical Diagnosis of Valvular Disease.* The abnormal sounds which accompany organic disease of the valves or orifices of the heart may be arranged under the heads obstructive and regurgitant murmurs, according as they have their cause in obstruction at one of the orifices of the heart, or in insufficiency of the valves which naturally close it ; or systolic and diastolic murmurs, according as they accompany the ventricular systole, or its diastole. The obstructive murmur at the aortic orifice and the regurgitant murmur at the mitral orifice accompany the systole of the ventricle. The regurgitant murmur of the aortic orifice and the obstructive murmur at the left auriculo-ventricular orifice accompany the diastole of the ventricles.

The following table will, perhaps, make this subject more clear ; it is nearly similar to one given by M. Littré :—

#### AORTIC ORIFICE.

Contraction of orifice—first sound, morbid ; second sound, natural.

Insufficiency of valves—first sound, natural ; second sound, morbid.

#### LEFT AURICULO-VENTRICULAR ORIFICE.

Contraction of orifice—first sound, natural ; second sound, morbid.

Insufficiency of valve—first sound, morbid ; second sound, natural.

The murmurs which accompany or replace the first sound of the heart, and are heard during the systole of the ventricles, differ in general from those which accompany or replace the second sound, in being louder, stronger, and more intensely blowing, or they may be rough and harsh, resembling the sounds of filing and sawing ; whereas, the murmurs which accompany or replace the second sound, and are produced during the diastole of the ventricles, are usually softer and more blowing. This is owing to the much greater degree of force with which the blood is expelled from, than with which it enters the ventricle.

I shall now proceed to notice the auscultatory signs of disease at each orifice of the heart.

#### AORTIC ORIFICE:

*Obstructive disease.* In contraction of the aortic orifice, or in disease of its semilunar valves, occasioning an impediment to the passage of the blood out of the ventricle during its systole, the normal first sound is obscured or replaced by a bruit de soufflet, or by a rough, grating, or sawing sound, which is loudest about the junction of the cartilage of the third rib with the sternum, which gives the impression of being superficial and near, is prolonged upwards for a short distance towards the neck, but is not audible at or below the apex of the heart. Disease of the lining membrane of the aorta may also occasion an abnormal murmur with the first sound without any disease of the valves ; this is usually more superficial, is audible higher up the neck, and is louder over the first bone of the sternum than opposite the semilunar valves. According to Dr. Hope, it may be known that the murmur proceeds from the aortic valves, rather than from the diseased ascending aorta, by its key not being higher than a whispered *a*,

whereas a murmur from the aorta is commonly a tone or two higher, approaching towards an *s*. In many cases, however, disease of the semilunar valves is combined with disease of the lining membrane of the aorta, and the abnormal murmur heard may have its source partly in the one, and partly in the other. This murmur has also been mistaken for that occasioned by regurgitation through the mitral orifice, which accompanies likewise the ventricular systole and the first sound of the heart; the latter, however, is loudest towards the apex of the heart, is audible below it, and can often be heard near the angle of the scapula behind, where the obstructive murmur of the aortic orifice is quite inaudible; besides, the character of the two sounds are different, as we shall see when we come to describe the physical signs of disease at the mitral orifice.

*Regurgitant disease.* The result of disease at the aortic orifice being more frequently to prevent the semilunar valves from closing the orifice perfectly, than to occasion an impediment to the passage of the blood out of the ventricle, the physical signs of regurgitation are more frequently present at this orifice than those of obstruction.

When the semilunar valves of the aorta permit regurgitation, the diastole of the ventricles and the second sound of the heart are accompanied or replaced by a murmur which has usually more or less of a blowing character, and may be either a short, whiffing, or hissing sound, or a soft and prolonged bruit de soufflet, which, in a few cases, passes into a musical murmur. This abnormal sound is loudest upon the sternum, a little below the junction of the third rib with this bone, which is about the size of the semilunar valves; it is hard also both above and below this point for a short distance, but is hardly audible at the apex of the heart.

The only valvular murmur with which it could be confounded is that caused by obstruction at the mitral orifice, which occurs also during the ventricular diastole, but a murmur from the latter cause is rare, for the reasons presently to be mentioned.

#### MITRAL ORIFICE.

*Obstructive disease.* Obstructive disease at the mitral or left auriculo-ventricular orifice; though a frequent lesion, is not generally accompanied by a murmur of any intensity; and if the contraction is considerable, a murmur is altogether absent. This, no doubt (as Dr. Hope has explained,) is owing to the force with which the blood passes from the auricle into the ventricle, being so trifling as hardly to be capable of generating a morbid sound, because the auricles possess little contractile power, and are almost constantly full, and the ventricle is not completely emptied during its systole. A murmur from this cause will accompany the ventricular diastole and the second sound of the heart, and its character must, for the reasons we have stated, be always soft and blowing.

*Regurgitant disease.* By far the most common valvular lesion met with is a state of the mitral valve or orifice permitting regurgitation; and the most frequent sound heard in such cases is bruit de soufflet, which is often loud, prolonged, and intensely blowing. It accompanies the ventricular systole, and obscures or altogether replaces the normal first sound of the heart. This murmur is often accompanied by purring tremor, if the orifice through which the regurgitation takes place is large, and the heart's action is at the same time strong; occasionally, too, it passes into a musical murmur.



The murmur of mitral regurgitation is louder about the apex of the heart than opposite the left auriculo-ventricular orifice, and there is a very good anatomical reason why this should be so. The *carneæ columnæ* of the mitral valve are attached near the apex of the heart and to the posterior wall of the ventricle; hence, a murmur produced at the left auriculo-ventricular orifice will be conveyed by them to the apex of the heart. Now, this part of the organ being in close contact with the parietes of the chest, the murmur will be better heard here than immediately over the orifice at which it is produced, because this orifice is deeply-seated, and a portion of the lung is interposed between the heart and the parietes of the chest in this situation, pulmonary tissue being a bad conductor of sound. For the reason stated above, this murmur is often audible also behind, near the inferior angle of the scapula. When the heart is much enlarged, and this murmur is at the same time very intense, it will generally be heard over a large surface in the precordial region.

The murmur of mitral regurgitation may be distinguished from that which is produced by obstruction at the aortic orifice (which occurs during the same period of the heart's action,) by its character, which is usually blowing and prolonged, whereas the other is often harsh and rough; by being louder near the left nipple than at the base of the heart, and diminishing gradually in intensity above this point; by being often audible posteriorly about the angle of the left scapula, where an aortic murmur would be inaudible; and by being often accompanied by purring tremor, which is very rare in the former case.

*Pulmonic orifice.* Disease limited to the semilunar valves of the pulmonary artery, or to the pulmonic orifice, is exceedingly rare; when it does occur, it is almost always accompanied by disease at the left side of the heart, the signs of which greatly predominate over those of the right side. Hence any abnormal sound is very uncommon at this orifice; and if it should occur, it is usually masked by the louder aortic murmur.

*Tricuspid orifice.* Contraction of the right auriculo-ventricular orifice is scarcely ever seen, but a state of this valve permitting regurgitation is not at all uncommon, though it does not give rise to a bruit which could be mistaken for that which accompanies regurgitation through the mitral orifice. Indeed, this lesion is generally accompanied by a dilated state of the right auricle and ventricle, and the force with which the blood is repelled backwards into the auricle is not sufficient to generate a morbid sound of any intensity. But this lesion is in general accompanied by a sign presently to be noticed—viz., distension and pulsation in some of the large veins of the neck.

From the precision with which the physical signs of disease at each particular valve or orifice have been laid down, it might be supposed that nothing is more easy in any case than to determine the valve which is diseased, and to detect the nature of the lesion. In practice, however, this occasionally comes to be a difficult matter: not because these signs are not in most cases diagnostic, but because disease of one tissue of the heart is generally combined with morbid alteration of some other tissue of this organ, and because the advanced stage of valvular disease is generally accompanied by more or less impediment to the circulation through the cavities of the heart.

For instance, the physical signs of obstruction at the aortic orifice are often combined with those of regurgitation through it, as it is evident that

the same amount of disease which deforms or occasions contraction of the orifice may render the valves incapable of closing it perfectly; the same may happen, and obviously for the same reason, at the left auriculo-ventricular orifice. Again, contraction at the aortic orifice may accompany regurgitation through the mitral orifice, or *vice versa*; or both orifices may be contracted, and both sets of valves at the same time permit regurgitation. The diagnosis in these complicated cases is necessarily much more difficult than where any single valve or orifice is engaged; it may, however, generally be made by attention to the rules already mentioned.

Not unfrequently, however, a further difficulty arises, in consequence of both sounds of the heart being altered or replaced by morbid sounds, and it appears impossible to distinguish the first from the second sound of the heart. This difficulty may sometimes be overcome by keeping the finger upon the radial or carotid artery while the stethoscope is applied to the precordial region; but, better still, by listening to the sounds of the right side of the heart upon the sternum, and to the right of this bone, where we can generally distinguish the two sounds; and then by tracing them from these points to the left side, we shall in most cases be enabled to distinguish the one from the other.

It is, however, a mistake to suppose that every variety of valvular disease is to be detected by the stethoscope alone; and, perhaps, from its advocates insisting too much upon the auscultatory signs, this method of diagnosis has been brought into discredit with some. The fact is, that a trifling derangement of the valves at the left side of the heart, or a small amount of disease in them, is sometimes more readily diagnosed than a very advanced form of the same disease; and one of the worst cases of valvular disease may be accompanied by no abnormal sound whatsoever. For instance, if the mitral orifice is greatly contracted, and the venous system at the same time greatly congested, little blood can pass either directly from the auricle into the ventricle, or backwards into the auricle, owing partly to the minute chink left for its passage, and partly to the constantly distended state of the cavities. Here no bruit of any kind will be audible on auscultation, and we must be guided by other signs in arriving at a diagnosis.

*On the Pulse in Valvular Disease.* On this point Dr. BELLINGHAM observes:—

The pulse affords no assistance to the diagnosis of valvular disease at the right side of the heart, and in several forms of disease of the valves at the left side, much less than might, *a priori*, have been expected. This is owing, in a great measure, to disease of one valve or orifice being often accompanied by disease in some other part of the heart, each impresses its own peculiar character upon the pulse, and thus leads to confusion. There are, however, a few cases in which the pulse presents well-marked characters, and in one form of valvular lesion it has been regarded as almost pathognomonic.

*Aortic regurgitation.* In disease of the aortic valves or orifice permitting regurgitation, the pulse is regular, but jerking and receding, and the pulsation of the arteries of the upper extremities and head is visible. This jerking character of the pulse in aortic regurgitation is very characteristic, and once felt can never be mistaken; in well-marked cases it appears as if the blood consisted of separate little masses which passed in succession under the finger applied to the artery. M. Simonnet has given the name

"*frottement globulaire*" to this variety of the pulse, though he is mistaken respecting its cause; Dr. Hope compares it to a hard ball shot with force under the finger, the artery feeling empty; and Dr. Watson to the blow of a hammer without any prolonged swell of the artery; the sensation communicated to the finger being as if successive balls of blood were suddenly shot along under the finger. In a patient by whom Dr. Watson was consulted, the shock of the artery was plainly to be felt through his clothes, by the hand laid lightly upon the bend of the arm. "His wife told Dr. Watson that for five years this jarring blow had made it uncomfortable for her to take his arm when walking together."

The explanation of the jerking pulse of aortic regurgitation is apparently simple; in the normal condition the arteries are always full; consequently, though the amount of blood transmitted at each systole of the left ventricle is small, this displaces a column of blood of equal size, and therefore is capable of communicating an impulse to the blood in the arteries at a distance, which occasions the pulse. If, however, the semilunar valves of the aorta permit much of the blood, transmitted during the systole of the left ventricle, to regurgitate during its diastole, a backward motion, immediately following the other, is communicated to the blood throughout the larger vessels; the arteries thus become comparatively unfilled, lose their normal state of tension, and the column of blood in them appears to be interrupted. This sign will be always best marked in cases where the cavity of the left ventricle is at the same time dilated, and its walls are hypertrophied. For the same reasons, the pulse at the radial artery follows the ventricular systole by an interval longer than is usual in this valvular lesion, as first noticed by Dr. Henderson.

In addition to the pulse being jerking and receding in regurgitation through the aortic valves, the pulsation of the arteries is visible and locomotive; this is most evident in the superficial arteries of the head, face, and upper extremities; in which, Dr. Williams observes, "the arteries sometimes appear like worms under the skin, wriggling into tortuous lines at each pulse." This condition is generally most remarkable in the temporal and radial arteries and their branches. The visible pulsation in the arteries was first pointed out by Dr. Corrigan as a sign of aortic regurgitation; he observes that it is best seen when the arm is held with the hand above the head.

The peculiar jerking pulse observed in cases of aortic regurgitation, though very characteristic of this valvular lesion, is not peculiar to it, but may occur in some other diseased conditions; it cannot therefore be considered as pathognomonic, as it has been by many writers. For instance, in true aneurism of the left ventricle of the heart, in aneurism of the ascending portion of the arch of the aorta, and in cases of considerable dilatation of the arch of this vessel, the pulse may have this character. In the two former, a portion of the contents of the ventricle will pass during its systole into an abnormal sac instead of into the general arterial system, and hence the arteries of the neck and upper extremities will be in an unfilled condition; in the latter, the capacity of the dilated aorta, much exceeding that of the left ventricle, and the coats of the dilated vessel being rigid and inelastic, as soon as the ventricular systole ceases, the blood from the upper extremities and head will regurgitate into the dilated aorta. In all these cases, therefore, the arteries being imperfectly filled, the pulse may have a jerking character, which cannot be distinguished from that

which occurs in regurgitation through the aortic orifice without an examination of other signs. But inasmuch as dilatation of the arch of the aorta is often combined with a state of the semilunar valves permitting regurgitation, and as aneurism of the arch is occasionally also combined with the same valvular lesion, the combination of these conditions may impress the peculiar jerking character upon the pulse in a still more remarkable degree.

*Contraction of aortic orifice.* In diseased conditions of the aortic valves, or orifice, occasioning contraction, narrowing, and deformity of the orifice, the pulse may be little altered, unless the amount of contraction is so considerable as materially to diminish the channel for the passage of the blood out of the ventricle, when it will become small and weak in proportion to the degree of obstruction. But in almost all such cases, the semilunar valves of the aorta will be incapable of completely closing the orifice, and the signs of regurgitation will generally preponderate over those of contraction. The pulse has not much value as a diagnostic sign in contraction of the aortic orifice, except in so far that unless in very extreme cases it is seldom intermittent or irregular; whereas, the small weak pulse of considerable contraction, or of free regurgitation through the mitral orifice, is frequently intermittent and irregular also.

*Mitral regurgitation.* When the mitral valve imperfectly fulfils its functions, and permits a portion of blood to regurgitate into the left auricle at each ventricular systole, the pulse may be either little altered, or it may present well-marked characters. For instance, if the aperture is small through which regurgitation occurs, the pulse will preserve its strength and firmness; but if the aperture is so large as to permit much of the contents of the ventricle to pass backwards, the pulse will become small and feeble, in proportion to the amount of the reflux current, and ultimately intermittent and irregular, when it will closely resemble the pulse of considerable contraction of the same orifice, next to be noticed.

*Contraction of the mitral orifice.* When the left auriculo-ventricular orifice is contracted, owing to disease of the mitral valve or orifice, the passage of the blood from the auricle into the ventricle must be more or less impeded, and the pulse will become small and weak, according to the degree of contraction and to the amount of impediment; and if this is very considerable, the pulse will, in addition, become intermittent and irregular. This form of valvular disease in general leads to hypertrophy and dilatation of the ventricle, and is often combined also with a state of the orifice permitting regurgitation. In such cases the contrast between the strength of the impulse of the heart and the pulse at the wrist is very remarkable; "the heart," as Mr. Adams observes, "often beating so violently as to shake the patient in his bed, while the arterial pulse is small, weak, and irregular." "I know not how," he adds, "to describe it otherwise than by saying, that it appears as if there were two pulses, one slow and deliberate for two or three beats, succeeded by three or four rapid and indistinct pulsations."

A small, weak, intermittent or irregular pulse is not, however, peculiar to these diseased conditions of the mitral valve or orifice: in softening of the muscular tissue of the heart, the pulse has these characters; it may also present them, in any form of cardiac disease, accompanied by considerable embarrassment to the circulation; as, for instance, in pericarditis with copious liquid effusion, or in cases where a coagulum forms in the

cavities of the heart; such cases are, however, in general, readily distinguished by other signs.

The principal source of fallacy in the pulse, as a guide to diagnosis in valvular disease, consists in obstructive disease of any valve being generally combined with a state of the same valve permitting regurgitation, or being not unfrequently combined with obstructive or regurgitant disease of another valve, or being further complicated with hypertrophy or dilatation of the ventricles, or with anemic conditions of the system.

**ART. 20.—*Diagnosis between the Bruit de Soufflet of Endocarditis and the Friction Sound of Pericarditis.*** [The following concise remarks will be found useful in reference to a branch of clinical study in which the inexperienced auscultator is apt to be at fault :]—

*Bruit de soufflet.*

1. The bruit of endocarditis is soft and blowing.
2. Is usually single and synchronous with the pulse and impulse.
3. Is prolonged so as in some cases to obscure the natural first sound.
4. Murmur distant and deep seated.
5. Murmur not limited to the precordial region.
6. Murmur persists in every stage of the disease, and in every posture of the patient.

*Friction sound.*

1. This sound presents different shades of rubbing, grating, or creaking.
2. Usually double; louder during the diastole than systole.
3. Short; seldom obscures the valvular sounds.
4. Superficial and near.
5. Sound limited to the precordial region.
6. Varies in intensity at intervals; is modified by posture; disappears more quickly under treatment.

**ART. 21.—*On certain Cases of Functional Disorder of the Heart.***

By. Dr. CHRISTISON.

(*Edin. Monthly Journal*, Feb. 1845, p. 80.)

The cases alluded to are chiefly met with among young adults, and are commonly mistaken for instances of organic disease. The affection usually coincides with a slender habit of body, and gives rise to symptoms which may be summed up in the following terms :—

The pulsation of the heart is frequent and very violent, so that the agitation of the chest is visible at a distance from the patient. The pulsation is always felt most intensely when the patient is in bed, and particularly when he lies on his left side; the symptoms are aggravated by hard study.

[As Dr. C. observes there is nothing in this group of symptoms to distinguish the affection from the ordinary functional disturbance.] One peculiarity, however, is the constancy of the leading symptoms, violent pulsation; and another is the region where the pulsation presents itself. The apex of the heart may be felt pulsating not as usual under the left nipple, but directly under the costal cartilages, very near the sternum, and between the fourth and fifth ribs. This part distinguishes the affection at

once from hypertrophy of the heart ; for in this disease the apex commonly pulsates much farther from the sternum, and lower down than the sixth rib.

In these cases percussion does not show any extended range of dullness, neither is there any abnormal bruit. The pathology is obscure ; it appears, however, that all the symptoms may be accounted for on the supposition that the heart is somewhat displaced, so that its apex lies unusually close to the parietes of the chest.

[The treatment of this affection recommended by Dr. Christison is living in country air, with moderate exercise and farinaceous food.]

ART. 22.—*On the Diagnosis of Aneurisms of the Aorta.*

By M. GENDRIN, Physician to La Pitié.

(*Revue Médicale*, Feb. 1845.)

The present memoir comprises the diagnosis of aneurism of each of the three anatomical divisions of the aorta. Aneurism of the *ascending* portion, when it becomes evident externally, appears in the form of an hemispherical circumscribed swelling, which pulsates isochronously with the heart. The skin is not altered in colour till the latter periods of the disease. The patient generally complains of pain in the tumour, which is increased during the systole of the heart, and which becomes oftentimes much increased by the motion and during the digestive process. The tumor is more or less painful to the touch, and pulsates strongly.

If the aneurism be so small as not to have arrived at the walls of the chest, it may be recognized still by its impulse, and by a dull sound on percussion, which indicates that the corresponding portion of lung is pushed on one side. Auscultation also reveals a double "*bruit de choc*," and a dry friction sound ; a to-and-fro sound, in fact, is sometimes interposed between the systolic and diastolic bruits. If the sight of the aneurism, and the heart be simultaneously examined, it is easily perceived that the sound given out by the aneurism is different both in seat and quality from that of the heart. The diastolic sound of the aneurism does not coincide with the second sound of the heart, but precedes it.

When the aneurism of the origin and ascending portion of the artery consists in simple dilatation of the arterial tunics, it gives rise to certain peculiar signs. Auscultation at the right border of the sternum, and over the cartilages of the second and third ribs on the *right* side, reveals the existence of only one bruit, combined with an impulse, which is synchronous with, and in some cases difficult to distinguish from, the systole of the ventricles.

The aneurismal bruit, however, is heard almost as distinctly behind as before—while the heart's action is nearly inaudible in the back ; moreover, the bruit depending upon the heart is heard on the left side, between the scapula and spine—the aneurismal bruit on the right. This difference in the sounds in the posterior aspect of the thorax is sufficiently diagnostic.

There is in some cases but little pain in simple dilatation of the ascending aorta ; and in general it gives rise to no more than a sensation of uneasiness and fulness under the sternum. In this respect it differs widely from aneurism depending upon erosion of the arterial tunics.

If the ascending aorta becomes the seat of considerable dilatation, or be enlarged by aneurism from rupture of its coats, the trachea is usually pushed slightly to the left side. A difference in the pulse in the two wrists is generally considered to be a diagnostic sign of aneurism of the aorta ; this sign,

however, is equally susceptible to simple arteritis, and therefore has no value as a diagnosis. Dyspnea is one of the signs of aneurism; but when the tumour is situated in the ascending portion it is not constant but occurs only upon exertion or mental disturbance. If however the aneurism be sufficiently large to compress the principal divisions of the bronchus, the difficulty of breathing is constant, and becomes suffocative when muscular exertion is made; and in such cases the compression is indicated by the existence of a *stridor*. When the walls of the bronchus become inflamed, in consequence of the pressure, expectoration of tenacious mucous is superadded, and would warn us of the near approach of one of the terminations of the disease, by rupture into the respiratory passages.

In some cases the compression is not limited to the trachea, but is extended also upon the origin of the pulmonary arteries, particularly those on the right side; the dyspnea is then greatly aggravated, and the patient usually is attacked with hæmoptysis. Lividity of the countenance is likewise present in these cases, on account of the deficient arterialization of the blood.

The dyspnea in cases of aneurism of the origin of the aorta, is often the result of a coincident affection of the heart or pericardium. Valvular disease and endocarditis form a serious complication, as they induce in general a greater or less amount of a ventricular hypertrophy. The proficient in auscultation will not confound the symptoms of these complications with those of the original lesion; but still the diagnosis often becomes sufficiently difficult to require attentive investigation.

It is a common opinion that the asthmatic paroxysm frequently depends upon disease of the heart and large vessels; it is not difficult, however, to distinguish real asthma from the dyspnea of cardiac disease. The former is truly paroxysmal, and oftentimes periodic, the intervals being in some cases of great duration. There is, moreover, constantly present a cough, with expectoration and sibilant râles. In general, emphysema may be recognised by the physical signs proper to that lesion. The diagnosis is further elucidated by the absence of the special signs of aneurism or *morbus cordis*.

Again, *angina pectoris* is frequently referred to simple or aneurismal inflammation of the organ of the aorta. This also is an error. The symptoms of the two affections are distinct; for instance, the substernal constriction and the neuralgic pain extending down the left arm, which are the essential symptoms of *angina*, are not necessarily present in aneurism. Sudden death also is common in the former but not in the latter. [This will doubtless appear a bold assertion, but it is nevertheless the author's exact expression.]

Aneurism of the *arch* of the aorta is generally situated in the interval comprised between the origin of the *arteria innominata* and the left carotid and subclavian. The projection of the tumour shows itself in the space included between the internal third of the second right rib, and the corresponding portion on the left side. It is also sometimes perceived in the hollow between the insertion of the *sterno mastoid-muscles*. When the aneurismal tumour of this part of the artery becomes apparent to the eye, it gives rise to symptoms identical with those lately mentioned. The aspect of the tumour is the same, and the pain has the same character, with the exception that it is perceived at the summit of the sternum, and between the shoulders. If the tumour does not project externally, its di-

agnosis is a matter of considerable difficulty, especially when the posterior portion of the arch is the part affected. The dulness on percussion in deep-seated aneurisms of the arch is somewhat obscure, and is therefore of little service as a diagnostic sign. The auscultatory phenomena are similar to those exhibited in aneurism of the ascending aorta, but are perceived in a different situation. In front they are heard at the summit of the sternum, and under the junction of the clavicle and first rib with that bone; behind, they are most evident on a level with the second rib, and close to the spinal column.

The deviation of the trachea is more decisive in aneurisms of the arch than in those of the ascending portion, but the apex of the heart is not displaced, as is occasionally the case in the latter. The pulse is deceptive as a diagnostic symptom taken per se, but is a valuable accessory sign, and is one by which we may judge of the exact site of the disease. If, as is commonly the case, the innominate is implicated in the aneurismal tumour, the pulse is feeble in the right wrist. When, on the other hand, the left pulse is the feebler of the two, we may conceive that the disease is located at the left extreme of the arch.

The dyspnea in aneurism of the arch, is subject to the same conditions as when the ascending aorta is the seat of the disease. It does not differ from the dyspnea, which occurs in the latter case, unless the trachea be compressed. In that case, inspiration is remarkably difficult, and is accompanied by a whistling sound. In some cases the voice is enfeebled, or even entirely extinguished.

Of all forms of aortic aneurism, those affecting the *descending* part of the vessel are the most difficult to recognise. It is difficult to distinguish the impulse and the bruit, when perceived in front from those of the heart itself, but we may sometimes arrive at a diagnosis by compressing the abdominal aorta. This causes the second sound to cease, if it originates in the artery, but has no influence upon the cardiac bruits. If, however, to the double "*bruit de choc*," perceived in the front of the chest, is added a sibilant râle, and if the second sound slightly precedes the diastole of the heart, the existence of an aneurism may be considered certain.

The signs of aneurism of the descending aorta are perceived more plainly in the back than in the front of the chest. They are, as perceived in this situation, the double "*bruit de choc*," together with a rough or sibilant friction sound. If these signs are very evident, no doubt need be entertained of the existence of aneurism, especially if they are conjoined to a tearing, gnawing pain along the spinal column, which is aggravated by motion of the upper extremities.

## SECT. V.—DISEASES OF THE CHYLOPOIETIC SYSTEM.

ART. 23.—On *Hepatalgia*. BY R. H. ALLNATT, M.D., F.S.A.

(*Medical Gazette*, March 1845, p. 798.)

[After premising that the subject of hepatalgia has been overlooked by the majority of systematic writers on medicine, or confounded by them with acute or subacute inflammatory action of the liver, the author thus proceeds to describe the affection:—]

Although the pains accompanying hepatalgia may be as intense as those



of hepatitis, and in some instances, perhaps, more urgent, they are not constant, but are, throughout, of a paroxysmal character affording, in the interval a complete immunity from pain. The pathognomonic symptoms indicative of inflammatory action of the liver, are pyrexia, tumefaction, great tenderness in the hypochondrium, frequent strong pulse, furred tongue, vomiting sometimes of a bilious, and at others of dark coloured secretion, accordingly as the substance of the liver is more or less implicated. The bowels are irregular, the evacuations variable in appearance; and the urine scanty and high coloured. In hepatalgia, on the contrary, these signs are invariably wanting; there may exist, indeed, constant pain and tenderness over the region of the liver, increased to a certain degree by pressure; but manifest exacerbations even in the worst case occur, which sufficiently indicate its paroxysmal character. The functions of the organ may proceed uninterruptedly as in the condition of health. The tongue may be clean, or only slightly furred in the centre, and the urine as in many other nervous disorders is increased in quantity, and of a lighter colour than ordinary.

The treatment of hepatalgia is very simple, and merely requires the combinations which are found to be useful in other cases of neuralgia. Mercury, as in *tic douloureux*, heightens the affection, increases the general irritability, and renders the system universally more obnoxious to incursions of morbid nervous sensibility. Carbonate of iron is also injurious. Gentle purgatives, combined with colchicum, ipecacuanha, and hyoscyamus, will seldom fail to work a speedy cure, and if the constitution have suffered from the protracted pain, alkaline vegetable tonics will effect what we shall in vain expect from mineral preparations.

ART. 24.—*On Cirrhosis of the Liver.* By D. J. CORRIGAN, M.D.,

Physician to the Hardwick Hospital, &c., Dublin.

(*Medical Times*, Jan. 1845.)

[The disease to which the term cirrhosis of the liver has of late years been applied, consists in a subacute or chronic inflammatory affection of the cellular tissue which forms Glisson's capsule, and which, as is well known, is intimately distributed through the organ, giving an investment to each acinus, and affording a bed for the ramifications of the blood and other vessels peculiar to the hepatic system. The consequence of this inflammation, as in the cellular structure of other parts of the body, is contraction, by which the glandular structure is irregularly displaced and compressed accordingly as this contraction varies in extent, and the blood-vessels and biliary ducts are more or less obstructed. When this pathological condition exists in a high degree, it constitutes the granular or hob-nail liver. The secondary effects of the lesion are of a very severe character, and are those which might be expected from the obstruction which exists to the course of the portal blood on the one hand, and of the biliary secretion on the other. They are jaundice and dropsy of the peritoneal cavity, with all the varied symptoms which arise from imperfect digestion and assimilation. This condition of the liver when once established, is as far as we know incurable, and as its initiatory symptoms are little understood, it too often gains a footing before any effectual means are taken to arrest its progress. For this reason we consider that the

following remarks of an eminently practical physician, are worthy of especial remembrance :]—

*Symptoms of first stage of cirrhosis.* A man comes to consult you, who has been ailing with, what himself and friends term, cholic pains—these are generally felt at, or about, four or six hours after dinner; so it is nothing unusual, if he has dined about five, P.M., for him to be awake from sleep by an attack of these pains. They are accompanied in general by quick pulse, from eighty-six to ninety, vomiting, constipation, and some slight degree of fever; under the use of some stimulant, taken internally, joined to the administration of a laxative clyster, this attack is removed; sometimes the patient attributes this train of symptoms to errors in diet, but after some short time they come on, when nothing of an injurious nature has been taken. According as the disease advances, you have these “cholic” fits more frequent, the vomiting is more intense, the pulse is quicker—this may or may not be so, it is immaterial; the skin is dry, the tongue is red, and smooth in the centre, presenting an appearance as if the papillæ had been removed from thence; in most cases there is pain felt at the top of the right shoulder, and in all a degree of jaundice, very slight indeed, is visible, which, however, is much better marked if you examine the conjunctiva, having previously turned out the lower lid. The jaundice in this disease comes on gradually. With regard to the pain at the top of the right shoulder, which, as you know, has been set down by the old writers, as a sign of hepatic disease, I must confess myself completely ignorant as to its cause. As to the value which is to be attached to it, numerous examples of this disease in which it has been present, lead me to look upon it as a very important item to be taken into account in coming to a diagnosis. In this stage of the disorder, along with the symptoms just enumerated, there is some slight pain present in the region of the liver and duodenum. But the most attentive and careful examination cannot detect the slightest alteration in the liver itself. The stools at this period, along with the usual feculent matter, are loaded with a quantity of mucus; and are sometimes streaked with blood. Here we must stop for a few moments to ask ourselves, what do the above-named symptoms denote? We have pain simulating that of cholic, accompanied with tenderness of the right side; vomiting; tongue smooth and red, seeming as if its central papillæ had been removed; quickened pulse at ninety-six; dry skin; pain at top of the right shoulder; and, lastly, passage of fæces, loaded with mucus and tinged with blood. Do they denote any intestinal affection? Not dysentery. For though we have mucous stools, streaked with blood, yet we have no tenesmus. The colon is not engaged; were it so, we should have diarrhœa. We must, therefore, proceed higher up the intestinal tube to search for the *locale* of the disease. This, I am inclined to believe, is the duodenum. This opinion I have been led to form from a careful consideration and comparison of the above symptoms, which, as I think, are nothing more than the signs of gastro-duodenitis, or duodenitis itself. And physiology explains to us how duodenitis may cause disease of the liver; it teaches us that diseases of membranous structures, adjoining which are glands that open on the above tissues by means of ducts of similar texture as the membranes in question, are liable to extend their action to the glands which open on such diseased membranes, or the glands may become sympathetically affected. We see this exemplified in affections of the mucous membrane of the intestines, which

frequently involve the glands of the mesentery in the existing mischief. This disease of cirrhosis I would look upon merely as the consequence of duodenitis, and we shall presently find another argument in favour of the opinion as to the gastric origin of the disease in question, in the fact, that the medicines we find most serviceable in removing certain functional diseases of the digestive organs, are these, which in the first stage of cirrhosis, have also been found most productive of benefit to our patients.

*Treatment.* The most essential preliminary to the successful medical management of your patient is an injunction on him to refrain sacredly from every description of stimulant, such as ale, porter, wine, &c. Such a prohibition will be the more necessary, because from the habit of taking stimulants of the above class during the pain, which most probably has been indulged in, and which might have been erroneously deemed capable of relieving the pain, your patient might fancy himself benefited by them, or at least, that they were not productive of injury to him.

Such an idea would be a most fatal one to act upon: because any trifling remission of pain produced (if at all) by their use, would be sure to be followed by an increased intensity of all the previous evils. All errors and excesses in diet must be religiously spoken against also; and the same veto must be placed upon any articles of food which the patient might previously have found prejudicial, though tempting. While you restrain him thus, you will take care that his diet is one of a sufficiently nutritious character, comprising, as it may, a light farinaceous milk diet, with a proportion of animal food, suitable, both in quantity and quality, to the enfeebled energies of the stomach and digestive apparatus. At the same time that you lay down these rules for his guidance, acquaint him fully with the peculiar and precarious situation in which he is placed,—a situation from the inevitable fatality of which, he cannot have the slightest chance of escaping, unless he implicitly adhere to your *dicta*. Another, and a most particular object for you to enforce all through, is the necessity which exists of your patient breathing as pure an air as possible. With men of business, who consult you at the commencement, such a thing could not be practicable, implying, as it does, an entire abandonment of business. Where circumstances forbid this, you must see that your patient's nights, *at least*, are spent in the country; without this precaution, all your remedial efforts will be unavailing. Indeed, it is astonishing to witness the wonderfully-restorative effects which a residence in the country produces in persons labouring under this disease. Before a month has rolled over in the country, the rheumatism, as the pain at the shoulder is called, will have completely disappeared from persons who had been doctoring themselves unavailingly, in town, with plasters, liniments, &c., for three, four, or six months previously: the pulse becomes slower, the tongue moist, the appetite becomes much improved: in fine they quickly become all but restored to their former health, under the conjoint good effects of pure country air and appropriate medicines. As regards the treatment "*paroxysmo instante*," I shall not detain you by entering minutely into its details. It will suffice me to mention that counter-irritation by spirit of turpentine (in the manner previously directed under the head of bronchitis) over the seat of pain, the exhibition of one or two grains of powdered opium, with calcined magnesia, in a draught, will invariably, in every case, be quite effectual in removing it. In such cases be not misled by the patient's statement of his having

derived relief from stimulants on former occasions. Do not have recourse to them, though they may have been sanctioned by prior medical advice.

Now, with regard to the radical treatment. Your first step should be the application of 10 or 12 leeches on, or the abstraction, by cupping, of  $\text{ʒviii}$  or  $\text{ʒx}$  of blood from, the usual seat of pain. The cupping over the liver and duodenum may be repeated once a week for three, four, six, eight, or nine times, as the severity of the case may seem to demand. *Here*, it would not be advisable for you to take away blood in any large quantity, as the persons in whom the disease generally appears, are not those who would bear with impunity such large evacuations, being for the most part, persons of constitution naturally weak and delicate. After the topical bleeding, counter-irritation should be directed to be sedulously employed over the surfaces covering the inflamed organs, and for this purpose I do not know of anything better than the unguent. antim. tart.; the use of which may alternate with the bleeding. Along with these topical means, you will have to employ constitutional ones, those which are generally selected to subdue inflammation. Direct for this purpose, the administration of mercury, combined with opium. Of this mineral, I invariably select the simplest preparations, such as iodum hydrarg., or the hydrarg c. creta. The administration of this mineral will require to be continued until its effects are produced, namely, gentle ptyalism. This must be kept up for a period of a fortnight or three weeks. Severe salivation, I reckon to be uncalled for here, and likely to be productive of injury rather than benefit, for the same reasons which I have urged against large bleedings, namely, its tendency to increase existing debility. After the mercury has done its work, you will very advantageously *now* prescribe the use of sesquinitrate of bismuth, a medicine, which, (although I do not think it possessed of peculiar or specific effect on the liver), in the present disease is eminently serviceable. The combination which I am in the habit of prescribing for this purpose consists as follows:—

R. Ferri cum saccharo  
Sodæ bicarbonat. aa gr. x.  
Subnitrat bismuthi. gr. v.

Fiat pulvis: to be taken three times a day.

This I direct to be persevered in for some length of time, till all the symptoms of pain are removed. This may take up a period of two or three months, but in general you will find it much harder to dissuade your patient from taking, (such an effect has it in relieving him) than you would have in persuading him to continue it. If the symptoms of this disease should again recur at any period subsequent to the discontinuance of the above combination, it will be very easy for you to have recourse to it again.

ART. 25.—*On a Dangerous Form of Jaundice.* [Dr. CORRIGAN thus describes a form of jaundice of not unfrequent occurrence, and which, if not judiciously treated in the first instance, is apt to prove fatal by coma and other symptoms depending upon the non-elimination of the bilious secretion: ]—

“This form of jaundice is to be met with, generally, among the poorer classes of society, but it occurs, with too great frequency among persons of the middle rank of life, who have, for the most part, led sedentary lives. We find it occurring in merchants, whose lives have been made uneasy by having met reverses in trade, or by engaging in unsuccessful speculations.

We find it occurring in females, mourning over the loss of a husband or a parent, while we as frequently meet with it in persons whose histories present nothing tangible to account for the disease. It sets in suddenly; sometimes we find the patient jaundiced all over in 30 hours, and this state of discoloration may continue for three days, three weeks, or as many months as weeks. In this form of jaundice, the pulse is regular, the tongue clean, the skin cool, and the appetite, in general, is tolerably fair; and we very often find, throughout the disease, the patient lively and cheerful, and able to perform the duties of life as well as ever. The only evidence of deranged health being, the jaundiced countenance, the white stools, and the urine loaded with bile. During this state of little, or no derangement, from the natural standard of health, if the slightest tendency to head affection, such as delirium or coma, should set in, no effort of your art can save the patient. All is at an end; for the records of medicine do not present a single case of recovery from the situation which I have just now described. I know that, in works on practice of medicine, you find this disease either not noticed at all, or if it is, merely as one of no importance. The most minute *post-mortem* investigations discover nothing whatever faulty, either in the brain, liver, gall-bladder, stomach, or intestines. With regard to its pathology, we are completely in the dark, but though I cannot give you any information on this head, yet as a set-off to this want of pathological knowledge on my side, I think that I can give you what you will prefer to this, namely, an unerring cure for the affection in question, whenever it shall present itself to you in your future practice.

Having seen many cases of this disease unavailingly treated in town by blisters and leeches to the side, by the exhibition of purgatives, alkalies, and mercurials; knowing many such cases which were deemed incurable here, that afterwards were cured by country quacks by means of nauseous medicines; struck with this fact, and reasoning from the effects on the stomach of the quack medicines which had been given for its cure, I determined to try the effect of emetics in it. The event was completely successful, and I can assure you, that in an ample experience of four or five years since I first adopted this line of treatment, I have not had a single failure. In general, I am not wont to speak sanguinely of any remedies but those on which I can place implicit reliance, and the present occasion gives me an opportunity of speaking most favorably of the medicine which I have just been recommending to you. For the cure of this disease, it will be quite unnecessary for you to prescribe mercury, or any other medicine, save an emetic of 3ss. ipecacuanha every second night until the jaundice disappears. This frequently occurs after the action of the second emetic; even it will not be necessary for you to have recourse to purgatives, as the ipecacuanha in most instances relaxes the bowels; but, if you do order purgatives, let them be of such a sort as will not colour the *feces*—so that you may perceive if the bile is again being propelled into the intestines. Of the medicines not liable to this objection, the best you can select are decoctum aloës compositum, and magnesia usta. By carrying into operation in your future practice, the routine which I have just sketched out for you, I am confident you will be able to add to mine, your unqualified approbation of the benefit derivable from the use of emetics in this form of jaundice.

*Medical Times, Jan. 25, 1845.*

**ART. 26.—On the Treatment of a peculiar Form of Diarrhœa.** The same physician has called attention to a form of diarrhœa, of frequent occurrence in the upper classes of society. He observes that:—"The persons most subject to this affection are females, of what is termed the leuco-phlegmatic temperament, characterized by weak, flabby, muscular development, and general indolence of constitution. In such persons, the menses may be either profuse, or sparing, in quantity; or they may be regular; but this is of no consequence. Connected with this bowel complaint, you will always find more or less of leucorrhœa, which, on inquiry, you will find to have preceded the diarrhœa: as though it would seem that the mucous membrane of the intestines becomes affected just in the same manner as the epithelium of the vagina; these persons are also affected with "bruit de soufflet" of the heart, which is always audible to themselves, and causes them great anxiety. You will find them also, labouring under catarrh, with copious secretion, accompanied by pain of a neuralgic character, here to-day and there to-morrow;—they get drooping and depressed in spirits;—lose all inclination for mixing in their usual society; and then their friends, fearing the occurrence of phthisis, become alarmed at their delicate state of health, and, in great consternation, look for advice. This train of symptoms would appear to be caused by the baneful effects of living much in fashionable life, and by stopping up late of nights in crowded rooms, to enjoy their pleasures. These evils, joined to the already existing one of a constitution habitually delicate, are quite enough to produce the disease in question. For the cure of this I have seen the Pharmacopœia unceasingly ransacked; I have seen the most powerful astringents tried, separately, and in combination with other remedies of the same character; still no good was done by them, while afterward the disease has yielded, and that quickly, under the exhibition of decoctum hæmatoxyli, as recommended by Dr. Abercrombie, in doses of a wine-glassful, three times a day. I had, not long since, a lady under my care labouring with this distressing affection, in whom it was quickly subdued by this simple remedy.

**ART. 27.—Semeiotic Value of Abdominal Pulsation.**

By J. NOTTINGHAM, M.D.

(*Medical Times*, Feb. 22, 1845.)

[Abdominal pulsation, is a frequent symptom, in many affections of very different characters; and is also one to which the patient's mind is uneasily directed. It may arise, according to Dr. Nottingham, under the following different circumstances:—]

Aneurisms of the aorta may give rise to it, in which case its intensity is influenced by the position, size, and state of progress of the aneurismal tumour; the facility with which it is detected depending upon the flaccidity of the abdominal parietes, and the absence of omental fat.

Enlarged pancreas sometimes originates epigastric pulsation, the pulsations of the subjacent aorta being rendered preternaturally distinct; of this Dr. Nottingham met with an instance in a female who died of pulmonary consumption. She was supposed to labour under aortic aneurism, as there was strong pulsation above the navel, with bruit de soufflet, and powerful impulse which raised the hand of the observer. The patient died, and the

body was examined. The aorta was healthy, but the pancreas was not so, being enlarged and firmer than natural; hence the difficulty of the diagnosis, the bruit de soufflet being here associated with a narrowness of the arterial tube by the pressure of the tumour.

In some cases, where the transverse colon is loaded with excrementitious accumulation, patients will complain of a "beating in the inside," and allude to it as one of the most remarkable symptoms of their malady. By attending to the state of the alimentary canal, the source of the beating will easily be detected.

Abdominal pulsation is also occasionally felt in carcinoma of the stomach; it may occur in mesenteric disease, in enlargement of the lumbar glands, or in any other tumour.

After pericarditis, when from adhesion the heart is more or less fixed to the diaphragm, its action is sometimes accompanied by a movement of alternate retraction and relaxation observed on the exterior of the epigastrium. This symptom is rendered still more evident if it coexists with hypertrophy of the left ventricle, and contraction of the cardiac orifices.

There are also states of the system in which the mass of circulating blood is suddenly lessened, the nervous irritability being at the same time augmented. In these states, abdominal pulsation is not an unfrequent symptom, and we meet with it therefore after great hemorrhages, as in parturition.

In certain other cases, the beating of the abdominal aorta is rendered unnaturally perceptible to the patient and physician, by the presence of flatus in the intestines.

## SECT. VI. DISEASES OF THE GENITO-URINARY SYSTEM.

### ART. 28.—*On the Pathology, &c., of the Urinary Deposits.*

By DR. GOLDING BIRD.\*

[Although the important researches of Dr. Golding Bird are now somewhat destitute of novelty, having been some time since embodied in the pages of the Medical Gazette, yet we think that we shall be conferring a benefit upon our readers by reproducing the more important portions of them in a condensed form, especially as the publication of a separate and most valuable work on "Urinary Deposits" comes within the limits of our retrospective labours. We feel convinced that the brief summary which we shall give cannot fail to produce the desire for a perusal of the original work:—

The principal pathological conditions of the urine which are commonly met with are the presence of uric acid and the urate of ammonia, the oxalate of lime, of the phosphates, and of certain elements of the blood.

#### URIC ACID.

*Diagnosis of uric acid deposits.* Uric acid does not dissolve by heat, but on the contrary is rendered more distinct by the solution of the urate of ammonia which frequently accompanies it. Hence, in examining for this

\* Condensed from "Urinary Deposits: their diagnosis, pathology, and therapeutical indications." 8vo. 1844.

deposit, heat the urine in a watch-glass; the uric acid becomes visible as the urate of ammonia dissolves. Heated with liquor potassæ, the uric acid dissolves. With nitric acid it is also dissolved; leaving, on evaporation, a residue of a beautiful pink, which becomes purple when held over the vapour of ammonia.

**Microscopic characters.** The original form of the uric acid crystal is the rhombic prism. In order to observe these crystals, allow the urine to repose in a tall vessel, decant the greater portion, and place some of the turbid layer into a watch-glass and warm it gently; remove the supernatant liquor by a pipette, and replace it with distilled water; the crystals then become distinct. "All that is then required, is to place on the stage of the microscope and under the watch-glass, a piece of black velvet; by means of a condensing lens, let a strong light be thrown upon the crystals; then bring the object glass into proper adjustment, and the colour, as well as figure of the crystals, will become beautifully defined on the black ground."

The rhombic form is, however, frequently replaced by others, especially by the square. Sometimes the crystals approach the figure of a fleur-de-lis, at others, they appear as flat tables, curiously marked with longitudinal striæ, giving the appearance of a fimbriated edge. The coarse sand, which is of a red or deep orange color, is generally composed of cohering, thick, rhomboidal prisms, forming, indeed, minute calculi.

**Diagnosis of Urate of Ammonia.**—These deposits vary in colour from absolute whiteness to a pale fawn colour, brick red, pink, or purple. The deposit does not appear until the urine has cooled, and disappears on the application of heat. If urine containing this deposit be placed between two glasses and examined with the microscope, it is found to be composed of myriads of minute globules, forming linear masses, or delicate stellate figures.

**Circumstances giving rise to the uric acid and its compounds.** "Excluding all abstract theories, whenever an excess of uric acid, or its combinations, occur in the urine, a normal quantity of water being present, it may safely be inferred that one or other of the following states exists:—

a. Waste of tissues more rapid than the supply . . . . .	}	Fever, inflammation, rheumatism, phthisis.
b. Supply of nitrogen in the food greater than is required for the reparation of tissues		
c. Supply of nitrogenized food not in excess, but digestive functions unable to assimilate it . . . . .	}	Excessive indulgence in animal food, or too little exercise.
d. The cutaneous outlet for nitrogenized excreta being obstructed, the kidney is called upon to compensate for this deficient function . . . . .		
e. Congestion of the kidneys, produced by local causes . . . . .	}	All grades of dyspepsia.
	}	All diseases attended with arrest of perspiration.
	}	Blows, and strains of the loins, diseases of the genital apparatus.

[The *medical treatment* of this condition of the urine must be based upon the due discrimination of the exciting cause. If the first condition be the cause, the remedy obviously consists in the withdrawal of a portion of the animal food, or an increase in the amount of exercise. Under the other



conditions of the system, the treatment resolves itself into the following indications:—

1. *Attention to the functions of the skin.* This is an indication of much consequence. Warm clothing, with repeated friction by means of a hair glove, removes the deposit of uric acid gravel. The warm bath, and still better, the vapour bath, is also a most valuable diaphoretic. The latter is conveniently applied in private practice by means of Duval's apparatus. Actual diaphoresis is by no means absolutely necessary.

2. *Restoring the tone of the organs of digestion.* This part of the treatment of calculous affections must be modified by the peculiarities of the case, and is identical with that of the different forms of dyspepsia. Great relief may be obtained by careful attention to the bowels, and minute doses of mercury, as a grain of hyd. c. cretâ, with three grains of extract. conii, given three times a day, with moderate doses of the carbonate of potash in infus. serpentariæ. Gastrodynia and pyrosis may be met with half-grain doses of argente nitras, given immediately before a meal.

3. *Remedies which act as solvents.* These chiefly consist of alkalies and their carbonates; the biborate and phosphate of soda, and benzoic acid. The liquor potassæ may be employed in half drachm doses thrice a day. The carbonates of potash and soda are, however, more agreeable forms, and of these the bicarbonate of potash is to be preferred. The latter may be usefully combined with citric acid, in the proportion of grs. v. to 3 ss. of the bicarbonate, dissolved in a tumbler of luke-warm water. This mixture evolves enough carbonic acid to be "sparkling," and is taken with readiness.

It is to be remembered that some persons cannot bear the free use of alkalies without suffering severely in their general health. Dr. Prout affirms that their injudicious use may lead to the formation of oxalic acid.

Other solvents are the biborate and the phosphate of soda; the latter is specially recommended by Liebig; the dose should be ℥j. to 3 ss, largely diluted. Dr. Bird states that he has administered this drug in two or three chronic cases of uric acid gravel with great effect.

The benzoic acid has likewise been much praised of late, having been first introduced by Mr. Ure. It may be given in ten-grain doses, dissolved in a weak solution of phosphate of soda, as below:—

R Sodæ carb. 3 jss.  
 Acid. benzoici, ℥ij.  
 Sodæ phosphatis, 3 iij.  
 Aquæ ferventis, ℥ iv.  
 Aquæ cinnamoni, ℥ viiss.  
 Tinct. hyoscyami, 3 iv. M. ft.  
 Sumat. seger. coch. in magna ter in die.

It is important to bear in mind, that, by the employment of remedies capable of dissolving a deposit in the urine, we are merely palliating, and not curing the disease. Its entire removal can only be accomplished by remedying that state of the system, or of a particular organ, which may be the exciting cause of the calculous formation.

#### PURPURINE.

Urine containing this substance is of a pink or purple colour, and of va-

riable specific gravity. The purpurine is deposited in conjunction with urate of ammonia, where that product is in excess, and gives to it a deep carmine colour. If the urine be evaporated to the consistence of an extract, and treated with alcohol, it yields a fine purple tincture. This property will at once distinguish the colouring matter from that of blood, for which it might otherwise be mistaken.

*Pathological indications.* The presence of purpurine in excess is almost invariably connected with some functional or organic mischief in the liver, spleen, or some other organ connected with the portal circulation. It is, therefore, in its lighter shades, a common occurrence in the dyspepsia of the intemperate. Pink deposits are almost constantly present in cirrhotic or contracted liver.

#### OXALATE OF LIME.

[Dr. Bird was the first to point out the frequent occurrence of this deposit; neither Prout, (until his last edition,) nor Rayer, nor Willis, have given to it the importance which it is now sufficiently clear that it demands. It is, according to the observations of Dr. Bird, of far more frequent occurrence in the densely populated cities than the deposits of earthy phosphates.]

*Diagnosis and microscopic characters of oxalate of lime.* To examine for this deposit, allow a portion of urine, passed soon after meal, to rest in a glass vessel; decant the upper fluid six-sevenths; pour a portion of the remainder into a watch-glass, and warm it gently. This proceeding removes any obscurity arising from the presence of urate of ammonia. Having then allowed the urine to repose for a few minutes, remove the greater portion of the fluid with a pipette, and replace it with distilled water. A white glistening powder will now become visible, which, under a low magnifying power, is found to consist of octohedral crystals of oxalate of lime. These crystals, ignited on platinum foil, give a residue of carbonate of lime. The octohedral is the ordinary shape of the crystals, but they sometimes assume other forms, the most usual of which is that of a dumb-bell.

A very constant phenomenon observed in the microscopic examination of oxalic urine, is the presence of epithelial scales. So constant, indeed, is this occurrence, that the presence of the latter has frequently led to the suspicion of the presence of oxalate of lime.

*Pathological origin of oxalate of lime.* This is a question of very great interest. It is scarcely possible to avoid being impressed with the probable physiological connection between this matter and the presence of sugar. It is indisputable, that saccharine matter finds its way to the blood under certain circumstances, and is eliminated by the kidneys; and we know that, under certain morbid influences, the blood may, while in the stomach, be rapidly converted into sugar, and pass by the kidneys as an effete matter. Recollecting, also, the facility with which sugar and its chemical allies, as gum, starch, &c., are, under the influence of oxydizing agents, converted into oxalic acid, we are tempted, with Dr. Prout, to the conclusion that the oxalate of lime owes its origin to sugar.

[Dr. Bird, however, has observed in opposition to this opinion:—1. That in the urine oxalate of lime is diffused through the fluid, and in a crystalline form. 2. That the urates are in excess in the majority of cases. 3. That in all there is more urea than in healthy urine of the same densi-

ty. 4. That there is frequently an excess of the phosphates attending the oxalate of lime. 5. That no evidence of free sugar has occurred in the specimens submitted to examination. Now, in diabetes there is seldom an excess of urea or the urates, the increased specific gravity depending solely on the presence of sugar. Thus so far as the abstract examination of the urine is concerned, no countenance is given to the idea of there being any relation between oxalic and saccharine urine. What then is the source of the oxalate of lime?—from the symptoms alone which accompany the deposit, there can be no doubt of the existence of serious functional derangement of the digestive organs, especially of the stomach, duodenum, and liver. Whatever, therefore, be the immediate agent which causes the kidneys to secrete oxalic acid, the primary cause must, as shown by Dr. Prout, be referred to the digestive apparatus. It must be recollected, also, that an excess of urea, and often of uric acid, in most instances accompanies oxalic urine; it is probable, therefore, that both these products are the result of the same morbid influence; and when the close chemical relation between urea, uric, and oxalic acid, is borne in mind, is it not a legitimate conclusion that the disease under consideration is a variety of azoturia, in which the vital chemistry of the kidney converts part of the urea, or the elements which in health would have formed urea, into oxalic acid?

*Symptoms accompanying the secretion of oxalic acid* :—As a general rule, persons affected with oxalic urine are remarkably depressed in spirits, and exhibit a peculiarly melancholy aspect. Dr. Prout mentions a lurid tinge on the skin. They are generally emaciated, hypochondriacal, and irritable in temper. The sexual power in men is deficient or absent. There is usually a constant pain or sense of weight in the loins, with great derangement of the assimilative powers.—[To these may be added, according to Dr. Bence Jones, frequent desire to micturate; the urine in some cases being scanty, at others profuse in quantity.]

The most common exciting causes appear to be exposure of the lower part of the spine to cold, mechanical violence in the same region, and unnatural excitement of the sexual organs, as is shown by the frequent concomitant of involuntary seminal emissions. In many cases there was no obvious cause beyond mental anxiety and attention to business.

*Therapeutical indications.* The treatment in the majority of cases is very successful. As a general rule, all the functions of the body, when obviously imperfect, should be corrected; the skin should be protected by flannel; and the diet carefully regulated. This should consist of well-cooked digestible food, of vegetable and animal substances; all things which tend to produce flatulence being carefully avoided. Beer and wine should not be allowed, especially the former. If some stimulus be required, the best is weak brandy and water. The nitric acid, or the nitro-muriatic acid in infus. gentianæ, if continued sufficiently long, will generally be found successful. In cases where these have failed, active tonics, especially the sulphate of zinc, or if the patient be anemic, the salts of iron, appear to be of great use, as is likewise the shower-bath. There is one remedy which appears to exercise a marked influence over the characters of the urine, and which holds out great promise of utility in oxyluria—this is colchicum. In two instances in which oxalate of lime existed in abundance before its employment, uric acid reappeared and replaced the oxalic acid in a few days.

## EARTHY PHOSPHATES AND CARBONATE OF LIME.

**Diagnosis.** The earthy salts are always white unless coloured with blood; they are soluble in dilute hydrochloric acid, and insoluble in ammonia or liquor potassæ. Heat does not clarify the urine. The chief errors in diagnosis arise from the presence of mucus and pus in the urine, which mask the chemical character of the earthy deposit.

The physical appearance of these deposits is variable; where it consists chiefly of the triple phosphates it subsides as a white crystalline gravel, or if the quantity be small it appears on the surface of the urine in the form of an iridescent pellicle. At other times the phosphates will fall to the bottom like a dense cloud of mucus, or hang in ropy masses so similar to that product as not to be distinguished from it by the naked eye.

The urine which deposits these salts is not necessarily alkaline; it is pale, secreted in large quantities, and of low specific gravity (1.005—1.014.) In the case in which the iridescent pellicle appears, there is usually present a form of irritative dyspepsia, but this is merely a functional and not an organic derangement, the urine being often of high specific gravity (1.020—1.030,) and containing an excess of urea. At other times, the urine is deep brown, fœtid, generally alkaline, and loaded with ropy mucus, in which the crystals of the triple phosphate will be discovered.

**Pathological indications.** These deposits always denote a serious state of things, being generally indicative of severe functional, and oftentimes of organic mischief. They always co-exist with a depressed state of nervous energy, which is often general and more rarely local in its seat. Of the former we have instances in the wear and tear of body and mind in old people; of the latter in injury to the spine. The occurrence of the triple salt, unconnected with deposit of phosphate of lime, exhibits the least alarming course of events. It is generally in these cases signalized by irritability of temper, restlessness, uncertain appetite, and fatigue on slight exertion.

In the milder cases of indigestion, especially in gouty habits, the phosphates appear in the form of the pellicle before mentioned. This condition of the system is disinclined to the formation of stone, but is rather to be regarded as an index of the state of the assimilative functions. A valuable diagnostic mark in these cases, in contra-distinction to those where organic mischief is to be apprehended, consists in the fact that in the slightest cases the phosphates appear only in the urine passed at night.

The triple salt likewise appears in the urine of very old people, especially if they have been deprived of the ordinary comforts of life, and occasionally also, as has been noticed by Simon, in acute diseases, as pneumonia and pleurisy, at a time when convalescence has barely commenced.

In those cases in which the phosphates appear in the form of strings resembling mucus, the two classes of salts are usually found mixed. The urine is then almost invariably alkaline, and more or less fetid. The prognosis is always unfavorable in such instances, as either organic disease of the urinary apparatus, or some serious lesion of the spinal marrow, is almost invariably to be suspected.

**Therapeutical indications.** In considering the treatment of the phosphatic diathesis, as it is sometimes called, four different pathological conditions are to be taken into account, each of which is demonstrated by a separate process of symptoms.

A. Cases in which dyspepsia, with some febrile and nervous irritation, exists independently of any evidence of antecedent injury to the spine.

B. Cases characterized by high nervous irritability with a varying amount of marasmus, following a blow, or other violence inflicted on the spine, but without paralysis.

C. Cases in which the phosphatic urine co-exists with paraplegia, the results of spinal lesion.

D. Cases of diseased mucous membrane of the bladder.

Of these it will be only necessary to direct attention to the first, second, and fourth series of cases, as in the third the deposition of phosphates is a mere symptom of a serious lesion, which, whether the result of violence, or of insidious disease, must be treated according to the particular disease existing.

The first class of cases indicative of the presence of irritative dyspepsia is by no means uncommon. The treatment must be directed rather by general principles than limited to the solution of the phosphates. The exhibition of acids is merely palliative, and rather does harm in some cases, by masking an important symptom, while the 'fons et origo mali' still continues in full force. After a certain attention to the moral bearings of the case, our principal attention should be given to the re-establishment of the general health. The bowels are to be regulated by mild mercurial laxatives, active purging being strictly avoided.\* When this has been accomplished, the following combination will be of use:—Tinc. hyoseyami, et Sp. ammon. aromat. aa ℥xx, et Mistur. gent. c. ʒj. Should gastrodynia exist, great relief will be obtained by the administration of the oxyde of silver in half-grain doses. As the patient approaches convalescence, considerable benefit will be derived from the sulphate of zinc in increasing doses, till four or five grains are taken thrice in the day.

The second form of the disease, which is characterized by a higher amount of nervous excitability, and by rapid emaciation, is more rare, but less amenable to treatment than the preceding. In this form the deposit is copious, and sometimes consists nearly exclusively of the phosphate of lime. The symptoms are lumbar pain, dry skin, red and varnished tongue, great thirst, and other symptoms closely resembling diabetes. The history generally affords some evidence of a strain or hurt of the back.

In the treatment of these cases, our chief aim must be to tranquillize the brain and nervous system by narcotics, as opium or morphia, as was first suggested by Dr. Prout, after which a generous diet, with the mineral tonics, as bismuth, zinc, or silver, are called for.

[In some cases the symptoms are of a milder character, but there is a great tendency to the formation of a calculus: it is in these cases that acids are called for, but there is much uncertainty attending their use. The nitric appears the most serviceable; and the benzoic as recommended by Mr. Ure may be occasionally beneficial; but Dr. Bird puts but little faith in either, especially the latter.]

The third class of cases, in which the phosphates are in all probability secreted by the unhealthy mucous membrane of the bladder, are familiar to all, as frequently following chronic cystitis, retention of urine, from stricture and enlarged prostate. Here of course the primary disease must be treated, and not the mere symptom. It is in this form in which much good occasionally follows the injection of dilute acid into the bladder. [An interesting case, in which this mode of treatment was completely suc-

cessful after every other plan had failed, is related by Dr. Bird, to whose work we refer, as our space will not allow of its extraction. Deposits of carbonate of lime, and silicic acid are occasionally met with, but not sufficiently often to render their notice of any great importance.]

#### ALBUMINOUS URINE.

*Detection of albumen.* As a general rule, if urine becomes opaque by heat, and on the addition of nitric acid, albumen is present; but if one of these tests alone be employed, there is the possibility of being misled by the following sources of fallacy:—

1. Heat will produce a white precipitate in urine, containing an excess of the earthy phosphates. *This is distinguished from albumen by disappearing on the addition of a drop of nitric acid.*

2. Heat, when applied to urine containing deposits of urate of ammonia, will sometimes, if actual ebullition be prolonged, produce a deposit of an animal matter insoluble in nitric acid. But this appearance is rare, and *is distinguished from albumen by being deposited only after protracted ebullition.*

3. Nitric acid will produce deposits in the urine of persons who are taking cubebs or copaiba; *this is distinguished by not being produced by heat.*

4. Albumen may be present, and yet not be precipitated by heat, if the urine be alkaline; *nitric acid must be used in this case as a test, since albumen combined with alkalies is not affected by heat.*

*Therapeutic indications.* When albumen is the only constituent of the blood present in the urine, the treatment will vary, accordingly as the kidney is merely congested or is structurally affected. [The treatment of the latter is not here alluded to, but the reader is referred to the works of Bright, Christison, &c. The management of the congested kidney, as it occurs in the dropsy of scarlatina, is thus described:—] The warm bath is the most valuable prophylactic remedy. I scarcely recollect, even in a large experience, a case of dropsy after scarlet fever, when the warm bath has been daily used as soon as the skin has begun to exfoliate, and continued until a perspiring healthy surface was obtained. When anasarca has occurred, strict confinement to bed must be enjoined, the warm bath used twice a week, and free action of the skin encouraged. This plan must be continued until all anasarca has vanished, and the urine is free from albumen. When this has taken place, the ammonio-tartrate of iron and more liberal diet will speedily remove the anæmic condition of the patient.

#### BLOODY URINE.

The presence of the blood-globules in the urine may be recognised by the microscope. The treatment will vary according to the immediate cause of the hemorrhage. Absolute rest, cold to the loins, the mineral acids, and acetate of lead administered boldly, and for a short time, are our principal remedies. No remedy has, however, appeared to Dr. Bird so efficacious in the treatment of hæmaturia as the gallic acid. It should be given in five-grain doses with mucilage and tincture of hyoscyamus. (pp. 61-230.)

ART. 29.—*Palliative Emulsion in Renal and Vesical Calculus*.—M. TOTT states that after numerous trials he has found no means of alleviating the severe pains caused by the presence of calculi so efficacious as the following:—

R. Ol. oliv. . . . .	30 grammes	
Syrup. passav. alb. . . . .	30	"
Pulv. acaciæ . . . . .	8	"
Vitel. ovar. . . . .	13	"
Aquæ calcis . . . . .	1100	"
Tinct. opii . . . . .	4	" M. fiat. Mist.

A tablespoonful to be taken every two hours. M. Tott likewise speaks highly of a mixture of 12 grammes of the lycopodium and 4 grammes of syrup of marshmallows. A spoonful to be taken occasionally. At the same time he administers enemata of assafœtida and opium.

*Hufeland's Journal.*

ART. 30.—*On the Treatment of Albuminuria.*

By C. S. B. WILLIAMS, M.D., Prof. of Pract. Medicine, University College.

(*Medical Times*, Jan. 18, 1845.)

Dr. Williams, in a valuable course of clinical lectures, thus expresses himself in reference to the treatment of morbus Brightii:—

The first indication is, to remove the congestion; the second, to restore the secreting function of the kidney; the third, to counteract the effects of the diseased state of the blood; and the fourth, and last, to treat the various symptoms of disease that may arise out of this disordered condition of the blood. Now the first indication will be effected by the remedies already pointed out for congestion, and more especially bloodletting. Cupping at the loins may also be applied. Bloodletting should be employed freely, in proportion to the strength of the patient and the fulness of the blood-vessels. This is to be aided by derivatives. Hydragogue purgatives tend to diminish the amount of blood in the system, and to drive out its watery parts. One of the best is cream of tartar, in large doses, or combined with jalap, but in its general effect it is better alone. One-ounce doses of cream of tartar, with half a grain of elaterium. The chief objection to this latter is, that it is very nauseating. The indication of derivation may also be assisted by sudorifics, by warm or vapour-baths, or a hot-air bed. Tartar emetic may also be given, where the circulation is excited, and Dover's powder, so as to increase the cutaneous secretion. It is also useful, after the excessive congestion has been removed, to venture on some diuretics, on precisely the same principles that you apply stimulating lotions externally. The diuretics that answer best, are the tincture of cantharides, the tincture of digitalis, and cream of tartar, in small doses, combined with opium or tincture of henbane, to soothe any irritating effect these remedies may have. It has been supposed by some that diuretics are pernicious. I believe that they may do great harm in the early stage of congestion, as they are liable to convert it into inflammation; but after this has been removed, they come into useful operation. Cupping at the loins, and counter-irritation, may be combined, to allay any remains of inflammatory or congestive action. These may be continued until the urine loses its albuminous deposition, when they should be withdrawn.

As to the third indication, that of counteracting the effects of the diseased blood, we do not know much about the means of doing this. There is a retention of urea in the blood, and we are very little acquainted with the means by which to counteract its injurious and poisonous effect; but I think it is a subject worthy of inquiry, whether matters which contain oxygen in excess will have any influence in this respect. The chief object is to evacuate it, and this is done by the measures already adverted to, hydragogue purgatives tend to remove urea, and to purify the blood. The fourth indication is one of great importance, and that is, to alleviate the troublesome symptoms. The vomiting, and other very distressing symptoms, in the early stage, may often be counteracted by medicines; diarrhea may be restrained by sulphate of copper; bronchitis by large blisters (as we treat the asthenic form of bronchial flux,) together with the use of opium. The dropsical effusions are to be overcome by the different methods already adverted to,—hydragogue purgatives and diuretics. Chronic albuminuria is also connected with other structural diseases, and in a few instances, with cancer of the kidney, and the form of yellow tubercle; but in ninety-nine cases out of a hundred it is combined with granular degeneration.

[In reference to the same subject, Mr. Kidd (*Dublin Med. Press*, Jan. 15, 1845) observes that in the chronic form of the disease our chief reliance should be placed in local depletion, as cupping in the loins, and the establishment of an issue in the same situation. He however cautions us against the promiscuous employment of the former means in debilitated subjects. Rayer (*Maladies des Reins*) has derived great benefit from the internal use of cantharides, ten or twelve minims for a dose in almond emulsion. Dr. Wells was in the habit of giving much larger doses (30 to 40 minims.) Purgatives associated with diuretics are recommended by Dr. Prout. Blisters are also occasionally useful, but in general whatever treatment we may employ will be found but of temporary benefit.]

**ART. 31.—On the Efficacy of Potassæ Nitras and Acid. Benzoicum in Enuresis.** By M. DELCOUR.

(*Journal de Bruxelles, and Medical Times*, Jan. 4, 1845.)

[Enuresis nocturna, though in most instances readily cured, is occasionally seen to resist the best-devised plan of treatment. We are, therefore, induced to believe that the following observations will not be unacceptable:] —The utility of the nitrate of potash in enuresis was discovered by chance by M. Delcour. This physician, when called to a lady afflicted with this disease, prescribed cantharides, which, however, produced so much irritation as to necessitate its speedy omission. Nitrate of potash was given after the symptoms produced by the medicine had abated, and completely cured the patient. He also exhibited the benzoic acid with perfect success in a case in which stychnine and cantharides had failed.

**ART. 32.—Treatment of Enuresis by Copaiba and Iron.** In the *Journal de Chimie et de Pharmacie*, Dr. Berenguier recommends the following prescription:—Balsam of copaiba 3 grammes, peroxide of iron 6 grammes.



Mix and make 100 pills. One pill to be taken three times a day at the commencement; the dose to be increased until ten are taken in the day. During the exhibition of the pills, an infusion of the nux pistachia is to be used as an ordinary beverage.

**ART. 33.**—*Incontinence of Urine produced by the Continual Use of Soda.* Mr. Ure has recorded a case in which incontinence of urine was supposed to follow a continual use of soda, as a remedy for acidity of the stomach. The case in question was cured by 4 grains of benzoic acid made into a pill with balsam of tolu, and a drachm of copaiba twice a day.

*Med. Gazette, March 1845.*

[It is an old opinion, that the liberal use of soda is in some manner detrimental to the genito-urinary apparatus; the sexual power in particular having been supposed to be influenced by its use. We can, scarcely, however, imagine that effects so severe as in the case alluded to can be attributed solely to the employment of soda; or we should surely observe these effects more frequently, considering how very common is the custom with many persons to take this alkali upon the slightest sensation of acidity in the primæ viæ.]

## SEC. VII. DISEASES OF UNCERTAIN OR VARIABLE SEAT.

### **ART. 34.**—*Distinction between the Scrofulous and the Phthisical Diathesis.* By Dr. CHAPMAN.\*

This author is a strong advocate for the independence of scrofula and phthisis, as the following remarks will testify:—

“Contrasted with the scrofulous, it may in the first place be stated, that with little of the external physiognomy appertaining to that state, it (consumption) has its own peculiar physical structure and aspect, among the features of which may be mentioned the long and delicate neck, the narrow flat chest, prominent shoulders, high cheek bones, long arms, large hands and feet, dark hair and eyes, with long tapering lashes, thick skin, and dingy complexion.

“They also differ in some particulars in the moral and intellectual constitution with which they are associated. As soon as the strumous habit becomes oppressed by disease of the organs contained in cavities (as the lungs, &c.), all vivacity is exchanged for gloom, petulance, and querulousness. The tubercular, on the contrary, sustains its original qualities throughout all its stages. Further and material differences are recognised in the two affections, the strumous constitution being most prevalent in childhood, and the tubercular in mature age. The former too assails both the internal and external structures, the latter takes a centripetal direction only.” (p. 24.)

[The same subject is thus discussed by Dr. Evans†:]—“Is there sufficient evidence that scrofula is identical with the phthisical diathesis?

\* Lectures on the more important Diseases of the Thoracic and Abdominal Viscera. By N. Chapman, M.D., &c. &c.

† Lectures on Pulmonary Phthisis. P. 189.

I think not, and am inclined to regard these states of the constitution as totally independent of each other for the following reasons:—

1st. I see every day numerous examples of phlyctenular ophthalmia, pro-rigo, rickets, and diseases confessedly peculiar to scrofulous children. I am frequently called upon to prescribe for lymphatic looking infants, with tumid upper lips, dilated pupils, swollen bellies, and enlarged cervical glands; but, upon inquiring as to the disease to which their parents and other relations have been liable, I do not find that consumption or decline is mentioned more frequently than among any, other classes of cases. I have known many large families, the members of which have all been more or less subject to scrofula in one form or another, and none of them had ever got phthisis.

2d. Upon inquiring into the early history of numerous phthisical patients, I have remarkably seldom met with persons who at any time have presented the characteristics of struma; nay, in one remarkable instance, when, out of a family of eighteen members fourteen died of consumption, not one ever presented a symptom of scrofula, unless acute hydrocephalus in one child could be considered as such.

Beer has distinguished between the phthisical and scrofulous diatheses with his usual acumen, and Mackenzie remarks that "it requires but little experience to observe that those individuals whose texture is extremely lax, with the nose and upper lip constantly swollen and scurfy, the abdomen distended, and who are commonly affected with chronic swellings of the lymphatic glands, form a sub-class sufficiently distinct from the subjects of tubercles in the lungs; the latter are lively and irritable, and are rarely affected with the external lymphatic swellings, the crusta lactæa, tinea capitis, ophthalmia tarsi, &c., to which the former sub-class are so liable."

"For these reasons, I think it very doubtful whether the characteristics of ordinary scrofula can be considered as evidences of the existence of a phthisical predisposition." (p. 169.)

[On the other side of the question, many authors of consequence might be cited, and among them, Sir J. Clark, Hamilton, Andral, Canstatt, &c. But M. Lugol\* is the latest writer who has minutely considered the subject, and we shall therefore transcribe a few of his observations: ]—

"The identity of scrofula and pulmonary tubercles is, in our opinion, most manifest; they have both an hereditary origin, and are equally general and fatal in the affected family. The two latter characters which belong to each of these diseases in an equal degree, are in themselves sufficient to establish their identity; but we shall endeavour to render the fact still more evident by demonstrating—first, that scrofula has frequently a tubercular origin; secondly, that the two diseases ordinarily coexist in the same family; and thirdly, that all scrofulous subjects have tubercles in the lungs.

"1st. More than half the subjects of scrofula have consumptive progenitors. Scrofulous diseases of all kinds, invade a family without the operation of any other cause than the existence of pulmonary tubercles in one of the parents.

"So general is this fact, that, in a ward containing 84 beds, [in which there is a continual influx of fresh patients, &c.,] we have constantly ascertained the existence of consumption in one or other of the parents of more

\* *Researches and Observations on the Causes of Scrofulous Diseases.* Translated by W. H. Ranking, M.D. Cantab.

than half the patients; and even this is below the real proportion, for a great many patients are utterly ignorant of the sanatory condition of their families, and in other cases the presence of consumption has been overlooked, because it was not accompanied by its more manifest signs.

"2d. The preceding observations are still further justified by the frequent coincidence of scrofulous diseases and pulmonary consumption in the same family. [Here cases are given in confirmation.] In scrofulous families, children often perish from disease in the lungs; and again, in consumptive families, some of the members are carried off by various forms of scrofulous disease.

"3d. Scrofulous children in the ordinary sense of the word—that is, children who are regarded as *scrofulous* and not *tubercular*—are, nevertheless, as much the subjects of this deposit as those in whom tubercle has concentrated itself in the respiratory organs. *The natural death of the scrofulous is by consumption*; we might say, indeed, that they seldom die in any other way, for in all forms of scrofula, death rarely takes place until after the invasion of the lungs by tubercular deposit." (p. 48.)

**ART. 35.—*Physiological and Pathological Researches on Tuberculosis.***

By H. LEBERT, M.D.

(*Müller's Archives*, 1844. *Abridged from Lancet*, Nov. 7, 1844.)

The following quotations form the principal features of a summary which is appended to a very valuable paper on this subject :—

1. The constant elements of tubercle are, molecular granules, an adhesive hyaline mass, and peculiar tubercle-cells of irregular form, containing no nucleus, but molecular granules. Water, ether, and weak acids, scarcely induce any change in tubercle. Concentrated alkalies, liq. ammoniæ, dissolve them completely.

2. Tubercle-corpuscles consist of cells having a very low power of development.

3. The opinion that tubercular substance is a modification of pus, is contradicted in the most positive manner by the microscope.

4. Tubercle-corpuscles are distinguished from undeveloped pus-globules, by the spherical form and greater diameter of the latter. Cancer-cells are clearly distinguished by their larger size, and these contained nucleus.

5. The pus which surrounds softened tubercle never originates as does the tubercle itself, but is formed directly in the surrounding parts.

6. Tubercle becoming hard and calcareous, is a natural process of cure. The peculiar elements of tubercle become in part absorbed, and in their place small mineral granules and sometimes granules of cholesterine are deposited.

7. The seat of tubercle in the lungs is generally the elastic cellular tissue, but it is also formed in the air-vesicles and capillary bronchial tubes.

8. The pneumonic engorgement surrounding tubercles does not possess specific characters, it exhibits the same elements of exudation, as ordinary pneumonia, viz., aggregate globules, fat vesicles, pus-corpuscles, &c.

9. The gray semi-transparent granulations of the tissue of the lung are also a true form of tubercle.

10. The opinion that the gray granulations are the result of inflammation is opposed by positive observation.

11. The tubercular ulcer of the lung is not physiologically different from the tubercular ulcer of the skin.

12. The natural effort towards the cure of a tuberculous cavity is by the formation of a true pus membrane, consisting of filaments enveloping small corpuscles.

13. The healing of caverns also takes place by mineral deposition.

14. In the sputa of phthisical patients, the following elements are found : *a*, mucous ; *b*, pus-corpuscles ; *c*, epithelium in its various forms ; *d*, granular substance, probably broken-down tubercle-corpuscles ; *e*, filaments of the lung ; *f*, fat-vesicles ; *g*, blood-corpuscles ; *h*, occasionally small infusoria.

15. Regular tubercle-CELLS are not commonly found in the expectoration of phthisis. There is no constant means of distinguishing phthisical from other sputa.

16. The law fixed by Louis, that after the age of 15, the lungs contain tubercles when they are present in other organs, is substantially correct.

17. Tuberculosis of the osseous system is a much more rare disease than is generally supposed. A mistake is often made between concrete pus and tubercular matter. In doubtful cases the microscope can alone determine the diagnosis.

18. Tubercles and cancer do not interfere with or exclude each other. Both morbid processes may run through the different stages of their development at the same time.

ART. 36.—*On the Topical Application of Cod-liver Oil in Strumous Affections.* [The medicinal qualities of this substance, if we are to believe the reports of the German physicians, who appear to have given it an extensive trial, are of a high order.] Dr. Brefeld has lately published a Memoir recommending the local application of the oil in certain scrofulous affections, as in glandular engorgement, ulcerations, &c. The preparation used by him is as follows :—

℞ Cod-liver oil	15 grammes
Saturine extract	8 “
Yolk of eggs	12 ;

mix intimately. This ointment is applied to the ulcers thinly spread upon lint. In strumous ophthalmia, M. Brefeld anoints the edges of the eyelids several times a day with the undiluted oil. In mesenteric disease the oil may be rubbed into the abdomen either warm or cold, as is most suitable to the feelings of the patient.

*Journal de Médecine.* Fev. 1845.

ART. 37.—*On the Influence of Warm Climates in the Cure of Diabetes.*  
By KEITH MURRAY, M. D., Fellow of the Royal Coll. of Physicians, Edin.

(*Edin. Med. and Surg. Journal*, Jan. 1845, p. 83.)

[In spite of the great advance which pathological inquiry has made of late years through the instrumentality of organic and vital chemistry, diabetes still continues to be one of the chief “*opprobria medicinæ*.” We hail, therefore, with peculiar satisfaction any information which is calculated to encourage us to perseverance in the treatment of a disease in which repeated failures too frequently tempt us to look on in despair, or at least

to attack it without method or energy. Of this kind is the excellent paper of which we shall now proceed to give an abstract :]—

“The almost constant fatality of diabetes, even in the hands of the most experienced medical men, and under the most favorable circumstances, clearly demonstrates that in our moist and cold climate, there are no means of cure, however well conducted, on which much reliance can be placed.

“None of the means which have been proposed appear so likely to ensure success as the exclusive use of animal diet, first suggested by Dr. Home, of Edinburgh, and afterwards strongly advocated by Rollo and others. But this method has lost the high character which it once held. Though there can be no doubt that it diminishes the quantity of urine, and renders it less saccharine, yet it can only be considered as a powerful means of palliating the disease. Whether a permanent cure could be accomplished by a long-continued use of animal food alone, cannot be easily ascertained, for few patients have sufficient self-control to continue this diet for any length of time.

“Dr. Watt’s treatment by bloodletting never raised such high expectations of success as that of Rollo. There can be no doubt, however, that venesection is useful at the commencement of the disease ; but it requires to be carefully regulated according to the strength of the patient, fullness of the pulse, and other circumstances of the case. Benefit has also been derived from cupping on the loins when pain has been felt in that situation.

“Opium, if given in large doses, determines strongly to the skin, renders the thirst less urgent, and diminishes the quantity of urine, while it calms the uneasiness and mental anxiety of the patient.

“The employment of diaphoretics is naturally indicated by the dry and harsh state of the skin, which is one of the most constant symptoms of the disease.\* The greater number of cases of diabetes on record appear to have proceeded from suppressed perspiration, or some cause acting upon the skin and disordering its functions. The suppression of the cutaneous discharge is one of the earliest symptoms, and it has invariably been remarked, that, whenever the disease begins to give way, the first symptom of amendment is a change in the state of the skin, which becomes soft and moist ; and that the diminution of the saccharine matter always keeps pace with the progress of the skin towards a healthy condition.

“Dr. Christie, finding the diabetes a much more manageable disease in Ceylon than in this country, proposed the employment of an artificial temperature. But to confine a diabetic patient to a warm room would tend much to increase the languor and despondency which always accompany the disease.

“In warm climates, where the skin is constantly in a relaxed and moist state, diabetes is a rare disease. Dr. W. Hunter, during a long residence in Bengal, did not see a case there. Dr. Prout is of opinion that malaria has considerable influence as an existing cause of diabetes. If this were the case, we might expect to find it a common disease in tropical countries where malaria abounds. However, during seven years extensive practice in the West Indies, where malarious diseases were the chief cause of mortality, I never saw or heard of a case of diabetes.

[The annexed cases appear, as far as their limited number goes, to afford

\* Not an invariable one however ; we can call to mind two fatal cases within the last twelve months, accompanied throughout by profuse sweating.—*Ed.*

the strongest evidence of the beneficial influence of a tropical climate, and are well calculated to arrest the attention of the reflective practitioner :]—

Case 1. M. J. Z., middle height, fair complexion, applied to the author, at Dominica, in 1828. Five years previously he had caught a severe cold in England, and diabetic symptoms were fully established. While passing twenty pints of saccharine urine daily, he sailed for the West Indies. During the passage out he suffered severely from sea-sickness, which caused him to perspire freely, with evident diminution in the quantity of urine. A fortnight since, he was exposed to cold and damp, and the diabetic symptoms returned in full force. When seen, his thirst was urgent, and his urine so saccharine as to attract the flies—quantity, nineteen pints.

[This case completely recovered under the use of Dover's powder and tartar emetic. The next instance is still more conclusive of the effects of warm climates.]

Case 2. M. F., æt. 25, of spare habit, clerk to the writer of the signet, had a severe attack of pleurisy three months ago, and was bled profusely ; since this he has felt weak ; he eats voraciously, and is troubled with thirst. Passed 16 pints of sweet urine during the last 24 hours. April 17th. Has lived on animal food since last report. Urine diminished to 10 pints. Ordered a warm bath twice a week, and to take 60 drops of laudanum and a grain of tartar emetic in the day. From this time the symptoms underwent several variations, the urine being sometimes as high as twenty, at others as low as four pints—and although upon the whole he was considerably improved by the 30th of May, he was far from well, and liable to relapse upon the slightest dietetic error.

At this time, hearing that he had relations in Jamaica, he was persuaded by the author to try the effect of a warm climate. He accordingly sailed, and arrived after a tedious voyage, and having suffered severely from sea-sickness. Under the perspiration induced by the nausea and vomiting, the urine was diminished to nearly the natural quantity. In three months after his arrival, he had gradually recovered. His urine returned to its normal quantity, and ceased to ferment on the addition of yeast. His skin became soft and perspirable, and he increased 12 pounds in weight. He was in good health two years afterwards.

Case 3. M. F. R., law student in Paris, caught cold in Nov. 1836, which left him severely depressed in spirits. Complained much of thirst, and consulted Dr. Imray for that symptom. The patient is 26 years of age, and a native of the Mauritius.

Feb. 10th. Urine 15 pints, of a pale straw colour, and ferments with yeast. As his health did not improve after six weeks treatment, Dr. Imray advised his return to the Isle of France. He sailed from Havre about the middle of March. In the course of six months after his arrival, his diabetic symptoms disappeared, without the use of any internal medicine beyond an occasional aperient.

[Three other cases are given which are equally conclusive with the preceding, as to the value of tropical climates in the treatment of this fatal disease. The author concludes his interesting essay in the following words :]—

“ Success in a few cases does not authorize me to draw a strong conclusion ; but I am nevertheless much impressed with the belief that residence in a warm climate, conjoined with proper regimen, will hereafter be

found to possess greater influence over diabetes than any other remedial means hitherto proposed."

**ART. 38.—Case of Diabetes Mellitus successfully treated.**—Dr. Van Ness relates the annexed example of the fortunate termination of this usually fatal disease. "A labourer, æt. 46, previously in robust health, began in the summer of 1838 to complain of being readily fatigued and of perspiring profusely at his work. His digestion was at the same time much impaired, being accompanied with acid eructations, and a sense of weight and sinking at the stomach; his urine is excessive in quantity, he is cachectic in appearance, and tormented with continual thirst. Evaporation of the urine afforded a large quantity of diabetic sugar. The diagnosis of the disease being thus distinctly established, Dr. Van Ness placed him upon a restricted animal diet, and at the same time exhibited the Peruvian balsam in half-drachm doses three times a day, increasing the quantity progressively. Under this treatment the patient rapidly amended, and in five weeks was entirely cured. The patient at the time his case was reported had become perfectly robust, and his urine was passed in a natural quantity and of healthy specific gravity.

*Hanov. Annalen*, 4—5, 1844, in *Schmidt's Jahrbücher*, 1, 45 Band, Heft 1.

**ART. 39.—On the Differential Diagnosis of Gout and Rheumatism.**

By CHARLES MACKIN, M. D.

(*Lancet*, March 22, 1845.)

"On an accurate comparison of the phenomena of rheumatism brought into juxtaposition with those of gout, we shall find sundry material differences, and a numerous train of minor points of distinction interesting both to the pathologist and the practitioner. The following table will serve in a general manner to illustrate this assumption.

#### *Gout.*

1. Is rare in females, who indeed are seldom attacked by the disease in a strict and uncomplicated form.
2. Is scarcely ever seen prior to the age of manhood.
3. Is generally, though not always, induced by high living, free indulgence at the table, &c.
4. Is hereditary, descending from father to son, sometimes missing one generation.
5. Affects the smaller joints, although the larger are often attacked. The parts abounding in fibrous tissues, as the sole of the foot, are seldom attacked by true gout.
6. Less frequently becomes chronic.

#### *Rheumatism.*

1. Is frequent among females, especially those who are necessarily exposed to its causes.
2. Is common to all stages of life, except perhaps infancy.
3. Is more frequent among the lower orders, and those to whom poverty and privation are familiar.
4. Is not hereditary,—at least not obviously so.
5. Affects the larger joints and fibrous tissues.
6. Has great tendency to become chronic.

*Gout.*

7. Subsequent to the paroxysm the patient is improved in general health, that is, comparatively.

8. Metastasis to other joints (common,) to the stomach (frequent,) to the membranes of the brain (rare,) to the pericardium (scarcely ever.)

9. Cornea, the most frequent seat of gouty inflammation of the eye.

10. Localization of gout not preceded by rigors.

[The author might have added, gout frequently induces tophaceous deposits in the joint; rheumatism never.]

*Rheumatism.*

7. Subsequent amelioration not so evident.

8. Metastasis to other joints (always,) to the stomach (rare,) to membranes of the brain (frequent,) to the pericardium (very common.)

9. Rheumatism chiefly attacks the sclerotic coat.

10. Rheumatic arthritis generally preceded by rigor."

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## SECT. VIII. DISEASES OF THE SKIN, ETC.

### ART. 40. *General Principles of the Treatment of Skin Diseases.*

By M. DEVERGIE.

(*Bulletin de Thérapeutique.*)

[In order to simplify a class of diseases which, more than any others to which the human frame is subject, has been confused by tedious and uselessly minute subdivision, M. Devergie divides them into two great classes; those which give rise to a secretion, and those which do not secrete. He thus proceeds:—]

1. "The maladies of the first class are, with the exception of acne, in general, inflammatory at their onset. They have, as in the instance of other inflammatory affections, a period of increase, a stationary period, and one of decrease, each of which periods requires a special mode of treatment. The first period is to be met with a purely antiphlogistic regimen; the latter by those medicines which excite a resolution of the morbid product; the intermediate period should be one of comparative inactivity on the part of the physician. Thus, *eczema*, *pityriasis rubra*, *pemphigus*, *ecthyma*, and *sycosis* require in the first instance an antiphlogistic treatment proportionate to the strength of the patient.

"The third indication ought never to be attempted until all inflammatory action has ceased. A certain degree of tact is likewise necessary in the application of remedies of the nature required, for some diseases appear to have certain predilections, so to speak: some will not bear fatty or oleaginous applications, but are readily cured by lotions. Knowing this fact, we are able to suit our remedies to the disease—in one case using an ointment, in another a lotion. Much depends upon the management of the strength of the external applications. An ointment which may be inert in one stage of the disease will be too irritating in another. It is always advisable to begin with a feeble application and gradually to increase its strength. *Sulphur* and *iodine* should be avoided at the onset of diseases accompanied by secretion.



"We must not forget, in the treatment of these diseases, to remove the exciting causes. For example, we shall strive in vain to remove *eczema* and *impetigo* in bakers, grocers, &c., while they continue to be employed in their trade; so likewise with the internal causes. *Rupia* and *ecthyma cachecticum* are constantly allied with misery and want. In these cases, good food and tonic medicines are indispensable. *Impetigo*, *acne*, and *eczema impetiginodes* are generally the diseases of the lymphatic constitution, and therefore require the treatment which is necessary in scrofula.

"Skin diseases of this class also require a modification in their treatment, according to the patient's age. As a general rule, a secreting skin affection should be treated with circumspection in the infant, and we ought not to seek to cure it until it has become chronic. Cerebral symptoms are frequently known to supervene upon the sudden removal of the *crusta lactea*.

"There are cases also in which a disease of the skin ought not to be cured in old age, if it be of small extent; as for instance, in asthma and bronchial catarrh. We have often seen a fatal pulmonary disorder arise when a skin disease has been too speedily removed; and such cases will resist every effort to save the patient. We shall seek in vain to restore the eruption by topical stimulants, as mustard, cataplasms, &c.

"There is, however, an age at which the very opposite line of treatment should be recommended. A great number of cutaneous affections develop themselves in young girls about the age of puberty, especially in those in whom menstruation is tardy: it is too often customary to allow the disease in those cases to run its course, under the impression that it is a salutary effort of nature. I cannot too strongly urge the fallacy of the opinion, for in the majority of cases, a cutaneous disease which establishes itself at this period becomes most rebellious, and continues for years to resist the most plausible treatment."

II. "The non-secreting diseases of the skin, like the former class, occasionally appear in the acute form, in which case they also require the antiphlogistic treatment, but in reality this should be palliative rather than energetic. In *erythema*, *urticaria*, *lichen*, *strophulus*, *herpes circinnatus*, *lepra* and *psoriasis*, repose is in general all that is necessary to abate the active symptoms, and indeed this in some cases should be rather encouraged, especially if there be much fever and the eruption is scanty. Some of the non-secreting diseases require a special medication. There comes a period in all these diseases, in which they remain stationary under palliative treatment, a circumstance which indicates the necessity for the remedies which will hereafter be mentioned.

"The second class of diseases, like the first, cannot always be cured with impunity, especially those which are accompanied by great itching. The *prurigo senilis* is an instance in point. The means which are most generally successful in *prurigo* are the "pommade d'helmerich," sulphur baths, and sulphur internally; but these remedies must be employed with discretion, for we have seen abscesses in the groin and axillæ, ophthalmia, and other accidents follow the too rapid removal of the pruriginous affection.

"The preparations of sulphur are the basis of the best medications for *prurigo*; alkalies are the most efficacious of all the medicines for *lichenous* eruptions. Of these the bicarbonate of soda internally, or three in the dose of two drachms per diem, together with alkaline ointments, will generally be successful. In the formation of the ointment it is advisable to

dissolve the salt in a small quantity of water previously to mixing it with the fatty matter, otherwise it is apt to irritate the skin from being unequally distributed through the ointment.

"*Lichen agrius*, however, forms an exception to the general treatment of this class of diseases. In this disease the tincture of cantharides will be found to be the most efficacious method for internal exhibition, and vapour baths externally.

"The treatment of the scaly diseases is comprised in the exhibition of the arsenical or antimonial medicines. The external means most likely to succeed is an ointment, containing tar, white precipitate or sulphur, and simple or alkaline baths. Each of these remedies will be separately considered in a future paper."

ART. 41.—*Formulae recommended by Bielt, in Various Forms of Skin Disease.\**

1. For porrigo decalvans:

Take marrow of beef bones, 3vj.

Oil of sweet almonds, 3ij.

Red bark in powder, 3j.

To be well mixed and melted to form an ointment.

2. For impetigo:

Take syrup of wild pansy, ʒxij.

Subcarb. of Soda, 3ij.

Mix; one table-spoonful to be taken night and morning. At the same time, the patches are to be poulticed with a linseed cataplasm containing 3j of sublimed sulphur.

3. In chronic eczema of the scalp:—

To drink every day, gradually increasing the dose, two spoonfuls of the following mixture:—

Infusion of scabious, Oj.

Nitric acid, ʒij.

Syrup of marshmallow, ʒiij. M.

To wash the scalp two or three times a day with the following lotion:—

Sulphuret of soda, 3iij.

Spanish soap, ʒss.

Alcohol, 3ij.

Lime water, Oj. M.

4. In porrigo lupinosa:—

To detach the crust with potato poultices:—

To wash the head with bran water, containing 3ij to the pint of sub-carbonate potash:—

To rub the parts with the following ointment:—

Deuto-ioduret of mercury, grs. xvij.

Camphor, grs. xij.

Lead, ʒj. M.

ART. 42.—*Summary of the History of Syphilitic Eruptions.*

By M. GIBERT.†

The author of the useful treatise from which the following abstract is

\* Practical Treatise on Diseases of the Skin, by H. Gibert Translated by Shep-  
pard, 1845. † Ibid. P. 338, et seq

taken, enters upon the consideration of the syphilitic skin diseases by a short review of the phenomena attending the primary affection. After a few remarks which seem to be addressed, for the most part, in opposition to the opinions of M. Ricord, he proceeds to state that all the different forms of syphilitic eruption may be reduced to the same classification as those depending upon ordinary causes. Thus we have an *exanthematous* syphilide (syphilitic roseola); a *vesicular* syphilide, confessedly rare; a *bullous* syphilide (syphilitic rupia); a *pustular* syphilide (syphilitic ecthyma); a *tubercular* syphilide; a *papular* syphilide (syphilitic lichen); a *scaly* syphilide (syphilitic psoriasis and lepra), very often consequent to blenorrhagia [? Ed.]: a syphilide showing itself in stains and patches; and the *ulcerated* syphilide, which may constitute a primary form (primary sore,) but which in many cases succeeds to one of the elementary forms just described.

Although there is considerable resemblance between the syphilitic eruptions and cutaneous diseases of another nature, there are always distinctive marks common to all the *syphilides*, and which are so characteristic, that an experienced observer can never mistake them. The *coppery hue* is one of the most certain of these; it may be found in all the forms of cutaneous syphilis, although it may not always be equally apparent, especially to an inexperienced eye. The *ulceration* which succeeds to many species, has also so characteristic an appearance, that it is impossible to mistake its nature. These ulcers are deep, round, callous, and as it were cut out perpendicularly, or they are serpiginous, forming spiral lines and the segment of a circle, and they are covered with dark green *crusts*, which are fixed deep in the dermis. The *cicatrices* are also peculiar, being unequal, spiral or rounded, white and depressed.

In the treatment of syphilitic skin diseases, mercurial preparations are the principal remedies: of these we continue to prefer *Van Swieten's* liquor, or the solution of *corrosive sublimate*, in constitutional syphilis. The best effects are also to be derived from *cinnabar fumigations*, either general or partial, the most rebellious cutaneous diseases sometimes healing under their use. M. Bielt, at the hospital of St. Louis, was partial to the employment of corrosive sublimate in pills, after the method of *Dzondi*, commencing with  $\frac{1}{10}$  of a grain, gradually increasing the dose to one or two grains in the day. The effects of this plan have frequently been most happy in severe and even hopeless cases.

Mercury frequently having irritating effects, which may become injurious in certain subjects, other remedies must occasionally be substituted, the *muriate of gold* has had marked success in some cases, but it is not employed with any great confidence. It is exhibited by means of friction on the tongue, in doses of  $\frac{1}{2}$  to  $\frac{1}{4}$  of a grain mixed with some inert powder.

*Sudorifics* have sometimes been employed successfully in constitutional syphilis. It is thus that guaiacum, sarsaparilla, mezereon, *Feltz's tisan*, *Zetman's decoctum*, and *Arnould's rob*, into which the sulphuret of antimony and aromatic substances commonly enter, have produced the best effects in the hands of good practitioners.

*Narcotics*, particularly opium, are often useful as auxiliaries, and may even be employed alone in cases where mercurials have failed. Blood-letting and other antiphlogistic remedies, can only be admitted as adjuvants under particular circumstances.

*Regimen* is always a means of treatment of the highest importance in

constitutional syphilis ; it forms an indispensable auxiliary when *Dzondi's* plan is adopted, or when *Feltz's*\* or *Pollini's*† *tisan* are given.

Patients tainted with inveterate syphilis frequently fall into a state of cachexia, and become severely affected by *specifics*, if we do not modify this condition, at the commencement, by judicious hygienic treatment.

The syphilitic poison, when inherited by the child, always declares itself in the form of an eruption. It usually shows itself towards the close of the first or at the beginning of the second month after birth. It has its seat at the perineum, and the internal surface of the thighs, in the form of *flat tubercles*, or syphilitic *ecthyma*, and from thence it spreads over a variable extent of the integuments. A little later the mucous membranes become affected, particularly the mouth and the labial commissures ; it is at this time that, if the child is confided to a nurse, the nipple of the latter ulcerates, and the disease is communicated to her thereby.

Syphilis in the new-born infant is always a severe malady. Nevertheless, if the child be otherwise well constituted, and both it and the nurse are submitted to proper treatment, a cure is easily obtained. We generally confine ourselves in children to the employment of topical applications, such as the following :—

Opiate cerate, ℥j.

Ammoniacal oxychloride of mercury, 3j.

To make an ointment.

Care is taken at the same time to prescribe emollient baths, and to see that the infant is properly cleansed. If the child be at the breast, the nurse is made at the same time to take corrosive sublimate internally, as in the subjoined pills :—

Extract of aconite, grs. xij.

Powdered opium, grs. ij.

Bichloride of mercury, grs. ij.

Mix and divide into eight pills, one to be taken each morning.

As to adults afflicted with syphilitic eruptions, we generally restrict ourselves to the use of simple, alkaline, or sulphur baths ; prescribing at the same time the bichloride or the ioduret of mercury. If the disease resists, we have recourse to the plan proposed by *Dr. Scatigua*. This consists in placing a drachm of strong mercurial ointment in the axilla. This is repeated the next day, and the patient then takes a bath, after which the proceeding is recommenced. I have seen an individual affected with *tubercular syphilide*, with indurations in the mouth, in whom the disease was cured by this method, after obstinately resisting the corrosive sublimate, the iodide of mercury, and Larry's syrup.

\* *Feltz's tisan* :—

Take cut sarsaparilla, ℥ij ; isinglass, ℥ss. ; gum arabic, ℥ij ; sulphuret of antimony, ℥iv ; water, Oxij. Macerate for 24 hours ; boil till it is reduced to half, the ingredients being suspended in a bag ; then strain. *Dose*, Oiss daily in three glasses.

† *Pollini's tisan* :—

Take pounded green walnut shells. lb. j ; sarsaparilla root, ℥iv ; powdered pumice-stone, ℥iv ; persulphuret of antimony, ℥iv ; water, Oxx. Boil to half. *Dose*, Oiss daily, in three portions.

ART. 43.—*On Local Applications in Cutaneous Diseases.*

By M. CAZENAVE.

(Annales des Maladies de la Peau, Encyclograp. Med. Sept. 1845.)

[The name of M. Cazenave is favorably known as that of the author of one of the best, if not the very best, practical treatise of Skin Diseases extant. Being one of the physicians of the hospital of St. Louis, and the successor of M. Bielt, his remarks are invested with peculiar authority:]—

“The application of topical remedies is without contradiction the most important part of the treatment of many forms of cutaneous disease. It is equally certain that the choice of the proper local application is a matter oftentimes of great difficulty. The sulphur ointment, which is so frequently and indiscriminately used, does not suit all eruptions; and again, an application which is useful in the decline of the disease, aggravates it in the commencement; another may be satisfactory to-day, and disappoint us to-morrow. Some eruptions are intolerant of greasy applications, others of notions. This susceptibility of the skin of certain persons and in certain diseases, requires to be well considered before we decide upon the use of external medicines.

“It is also a matter of the utmost consequence, to pay great regard to the actual condition of the eruption. Unfortunately, however, this point is too often lost sight of, for we continually see on the one hand an irritating ointment, or a sulphur bath, prescribed for a disease in which active inflammation of the dermoid tissues is going on; and, on the other, emollient applications in the chronic stage of a disease, where stimulating applications are required. It is the proper understanding of this part of the subject, the time at which such and such ointments may or may not be used, that renders one medical man so much more successful in the treatment of skin diseases than another.

“As a general rule, none but emollient applications are suited to the treatment of skin diseases accompanied by inflammation; but, on the other hand, these should not be too long persisted in, for they tend to enfeeble the texture of the skin and render it flabby. Greasy applications, for the most part, are hurtful in all the acute forms of cutaneous disease. This is especially the case in *lichen* and *eczema*.

“Certain forms of eruption are more tolerant of local applications than others. For example, *psoriasis lepra*, and the drier forms of *herpes*, &c., are advantaged by them, in *eczema*, on the contrary, they cannot be used without great precaution. *Lichen*, on the contrary, rarely bears lotions or ointments of any kind; neither do the pustular eruptions, unless they have become chronic, and give rise to thick adherent scabs. Certain other forms of disease imperatively require local medication, such as *scabies* and *lupus*, and the ‘*sypilides*.’

“We see, therefore, that in practice as well as in theory, it is impossible to classify diseases in such a manner as to bring them under a specific mode of treatment. As a general proposition, however, I would state that, in the majority of the diseases of the skin, contrary to the received opinion, topical applications are of secondary importance, in some they even delay the recovery; and that it is to internal medicines that we are to trust, to obtain a radical and complete cure.”

[The author concludes this portion of his remarks by the observation, that he now generally replaces emollient applications, as poultices, &c., by the powdering the affected part with starch or oxyde of zinc. We have long been in the habit of doing the same thing with the greatest benefit, in the more acute stages of eczema, and all diseases accompanied by copious secretion. The application we prefer, is finely-powdered magnesia, or flour, and the nitrate of bismuth, in equal parts. We have found this invaluable in the intertrigo to which children are subject, in the sore nipple of nurses, and in superficial burns.]

ART. 44.—*On the different sorts of Caustics.* By M. CAZENAVE.

(*Annales des Maladies de la Peau*, Oct. 1844; and *Méd. Chirur. Review*, April, 1845.)

The powder of Dupuytren is composed of one part of arsenious acid and 200 parts of calomel. It is a mild and very manageable caustic, and will be found serviceable in cases of lupus occurring in women and children, when the ulceration is superficial and of limited extent. If the diseased part be dry, it may be necessary to denude it by means of a blister, and then to sprinkle the powder upon the raw surface. A certain amount of heat and pain is usually caused by the application. When the eschar becomes detached, there is generally observed to be a decided modification of the diseased surface, and a few applications are in many instances sufficient to effect a cure.

The *Vienna powder* and *paste* are caustics of great power in certain cases of lupous ulceration. They are composed of equal parts of powdered quicklime and potassa c. calce. In using it, it is made into a paste with spirits of wine, and applied upon the diseased part, which is previously exactly circumscribed by a hole cut into a piece of sticking plaster. The paste is to be left on for ten or twenty minutes, according to the depth of the eschar required.

The *chloride of zinc paste* is much used in the present day. It is made by mixing one part of this substance with two or three of flour, and moistened with as little water as possible. The pain lasts for several hours. M. Cazenave frequently has recourse to this caustic to destroy non-ulcerated lupous tubercles.

[The directions for using this caustic are not here well defined; and, as it is one of great power, and requiring delicate management, we shall detail the precautions which a considerable experience in its employment has suggested. The paste is to be made as above directed, but should not be applied thicker than one or two lines, nor left on longer than from six to ten hours. An application of one line in thickness for ten hours, will, in some cases, form an eschar of nearly a quarter of an inch in depth, so that, as may be imagined, it is not a caustic to be lightly or carelessly employed. As far as we have observed, the pain is of a very endurable character compared with that of the arsenical paste, or the nitric acid. We know of no caustic to be compared with it in the doubtful looking ulcerations which are met with in various parts of the body.]

In cases of long-standing corroding lupus, M. Cazenave gives the preference to the arsenical paste, its action being two-fold, local as a caustic, and general, by being absorbed, and exercising a potent alterative or modifying action upon the economy. The following is the formula:—

White oxyde of arsenic, 2 parts.

Sulphate of mercury, 1 part.

Animal charcoal, in powder, 2 parts. Mix.

When used, a small quantity of this powder is to be made into a thin paste by a few drops of water, this is placed upon the surface to be acted upon, which should never exceed the size of a franc-piece. This caustic not only produces sharp pain, but also a severe erysipelatous swelling, which lasts for several hours, and is sometimes accompanied by severe constitutional disturbance.

*Fluid caustics.* M. Cazenave frequently makes use of a weak solution of the sulphate of copper, or of the nitrate of silver, in the treatment of favus and tinea.

One of the most potent of the fluid caustics is the *acid nitrate of mercury*. When used undiluted, it acts as a mere caustic, but when considerably weakened, it is absorbed. It is chiefly used in superficial lupus.

The erysipelatous inflammation which is excited by these caustics, need not be much dreaded; indeed in some cases the cutaneous phlegmasia appears to be decidedly beneficial, and is therefore in some cases purposely excited as a means of hastening the resolution of obstinate lupoid tubercles.

**ART. 45.—*Lupus cured by Ol. Jecoris Aselli.*** This case occurred in the person of a young female, æt. 20. The face was eaten away by tuberculous ulceration, the fleshy parts of the nose being completely destroyed. Independently of this, there existed scrofulous abscesses in the neck, caries of the molar bone, white swelling of the wrist. All these severe lesions are now completely cured, after the employment of iodine internally and externally, and caustics of various kinds, by the internal and external use of cod-liver oil. The treatment was continued for more than a year. M. Gibert, in relating this case, very properly observes, that no benefit can be expected in the treatment of scrofula, without time and perseverance.

*Bulletin de l'Académie, Nov. 1844.*

**ART. 46.—*Warm Water as an External Application in Eczema.*** Mr. Phillips has found the above a most efficacious application in that intractable form of skin disease—chronic eczema. The case here reported was unusually severe, being of six years' standing; the skin being thickened and hardened and tissue in every direction. It completely yielded to the above treatment in four weeks, leaving the skin soft and pliable. The case was that of W. K., æt. 49, admitted into the Westminster Hospital under the care of Mr. White. The limb was hypertrophied to such a degree as to have some resemblance to the Barbadoes leg. No former plan of treatment had been of any use.

Ordered to take Hyd. chlorid. grs. v, Pulv. jalap. grs. xv, twice, with an interval of two days. The limb to be bandaged with bandages dipped in warm water, the whole to be covered with oiled silk so as to form a constant tepid bath. To take Liq. arsenicalis ℥ v, twice a day.

Under this treatment the integument had become soft and smooth in three weeks, and in six weeks he was discharged cured.

[The Editor has long been in the habit of employing a modification of the above plan with much success, the application made use of by him being fresh cream, with liq. plumbi, instead of water. The oiled silk forms the most important part of the plan.]

*Med. Gazette, March 7, 1845, p. 722.*

**ART. 47.—A new Depilatory in Tinea.** The principal obstacle to the cure of the porriginous eruptions of the scalp consists in the difficulty of removing the diseased hairs, the persistence of which contributes greatly to the maintenance of this disease. Various formulæ have at different times been proposed in order to effect this object, but none that we are aware of can be considered as free from objection. The pitch-cap is but the remnant of that barbarism which appears in some instances to have clung to the healing art long after it had lost its hold upon other institutions; the process of the Brothers Mahon, though mild in its operation is tedious, and from the nicety with which it must be used, and the ceremony which it involves, renders it one which we can seldom carry into operation in private practice. We are, therefore, happy to have the opportunity of recommending a new formula, which its inventor, M. Boetger, of Frankfurt on the Maine, states to be most efficacious and speedy in its operation :—

This depilatory consists of the “sulpho-hydrate of the sulphuret of calcium,” and is made by passing sulphuretted hydrogen to saturation through a mixture of two parts of slaked lime, and three parts of water. The result is a jelly-like substance of a blueish green colour. It is sufficient to apply a layer of this of a line in thickness to the parts to be denuded, when in the course of three minutes the hair will be entirely removed without the least injury to the epidermis, and without causing the slightest pain.

*Journal de Médecine de M. Beau, Dec. 1844.*

#### VARIA.

**ART. 48.—On the Endermic Use of Purgatives.** M. Salques makes the following practical remarks respecting the employment of purgatives :—

“There are many cases both of acute and chronic disease, in which, although it is distinctly of importance to relieve the bowels, yet the irritability of the stomach is so great as to preclude the ordinary mode of exhibiting aperient medicine. Injections too frequently fail in their object, as they cannot pass the accumulation of hardened fecal matter. In such instances we have frequently recommended the recurrence to the endermic method.” The following case exhibits the good effects of the plan :—A little girl, æt. 7, was attacked by acute meningitis. Constipation had existed for 15 days, and the stomach rejected all medicine. Enemata could not be exhibited on account of the extreme aversion which the child showed to their administration. Two blisters had been applied to the thighs when M. Salques was called in, which he ordered to be sprinkled with powdered colocynth. Three hours afterward the bowels were copiously relieved, and the cerebral symptoms vanished.”

“M. M., æt. 76, was the subject of an apoplectic seizure. Seventeen days elapsed without relief, and the stomach rejected all medicine. Colocynth was, therefore, sprinkled on a blister behind the neck, and with the speedy effect of overcoming the constipation.”

“M. D., æt. 82, had a slight apoplectic attack in January, 1844. Constipation became habitual, and after an accident caused by a fall resisted calomel and even croton oil. Hiccup and distention of the abdomen had supervened, when a blistered surface was sprinkled with colocynth. In five hours a prodigious quantity of feces was passed.”



From the analysis of these and similar cases the author draws the following deductions:—

1. There is a considerable number of cases in which the endermic method of purgation will be found highly advantageous.

2. Colocynth is peculiarly suited to endermic application; the same good results do not follow the use of aloes.

3. If the application does not cause the action of the bowels, it should not be persisted in, as it is liable to irritate and inflame the bowels as much as if taken in the usual way.

*Revue Médicale de Dijon, 1844.*

**ART. 49.—Treatment of Tænia by Pomegranate Bark.** Dr. MERCK states that this substance, when properly administered, never fails in effecting the dislodgment of the worm. He observes, that whenever a patient has evacuated portions of tænia, he must, if this method of cure be decided upon, take on the same, or the next day, a decoction of 20 oz. of the fresh bark of the pomegranate root, in lb. iss of water, reduced to lb. j. This quantity is to be taken in three doses, allowing half an hour to elapse between each dose. The worm will constantly be expelled in 24 hours at the utmost, and no relapse need be feared. The want of success is owing to the fact, either that the dry bark is used, or that it is not genuine. It will also be liable to failure if the dose is taken too great a time after the portions of tænia have been expelled, or if the dose is too feeble. No purgatives are necessary.

*Revue Médicale, Med. Times, Jan. 11, 1845.*

**ART. 50.—A new Vermifuge.** The tapeworm, and particularly the tænia solium, is endemic in many parts of Abyssinia; so much so, indeed, that few natives are exempt from the attacks of the parasite. Fortunately, however, the country which is so pre-eminently the seat of this disease, possesses a most efficient remedy in the flowers of the kosso, which tree being so indispensable to the health of the people, is carefully preserved. The natives are in the habit of taking this valuable anthelmintic every two months, children commencing it at the age of five or six years, and continuing it for the rest of their lives. Being a most violent drastic purge, it cannot be thus indiscriminately taken with impunity, and prolapus ani is therefore a common affliction in that country.

The kosso (*Hagenia Abyssinica*), when mature, attains the growth of a moderate sized tree. The medicinal part is the flowers, which are carefully dried and separated from stalks, and then pounded fine. The dose varies from six to eight drachms, and is taken in cold water early in the morning. It usually acts in the course of a couple of hours, the worm being generally expelled in the third or fourth evacuation.

Should this plant be considered worthy to be introduced into European practice, a supply could be readily obtained at Massowah, on the Red Sea. Being of a hardy character, the plant might also be successfully cultivated in Europe.—

*Transact. of the Med. and Phys. Society of Bombay, and Dublin Journal, March, 1845.*

**ART. 51.—Forms of Disease in which Opiates are indicated.** Dr. SOBERNHEIM furnishes us with the summary of the diseases in which opium is beneficial, and the form of its exhibition:

1. *Fevers (a) Intermittent*, when offering a nervous character (strong

shivering, great anguish, unusual excitement, followed by exhaustion, giddiness, heaviness of the head, hallucinations and alienation of the senses, spasmodic and convulsive symptoms; pulse small, frequent, and irregular, skin cool, cold extremities, violent vomiting and purging.) In such cases, it is either administered in large doses (from 1 to 3 grains) shortly before the paroxysm, or a little after the shivering has commenced (4 to 6 drops of tincture every hour, with chamomile-tea,) or in the intermission (a quarter of a grain of opium with two grains of quinine every three hours;) if the disease be combined with apoplectic phenomena, venesection is to precede it; if with gastric symptoms, an emetic. Graefe and Luders recommend opium (a quarter of a grain) with quinine (2 grains) against the dangerous shivering, subsequent to deep traumatic lesions, undoubtedly caused by the reflex action of the spinal marrow. Malgaigne also uses opium with the greatest success, after serious operations, to prevent fatal traumatic inflammations. He administers from 6 to 10 grains of opium during the day, and continues it as long as inflammation is to be feared. By this method he asserts to have prevented fever, local inflammation, and even pain. (b) *Typhus fever*, with great excitability (exhausting discharges, great excitement and sensitiveness, loquacious delirium, continual sleeplessness, pulse small, spasmodically contracted, skin dry, extremities cold,) in small, repeated doses, in the form of *Dover's powder*, with *ammon. carbon. pyro-oleos.*, to encourage the crisis of the skin, but with great caution. In those forms of *typhus abdominalis*, which are combined with inflammation and ulceration of the intestinal mucous membrane, it is to be employed, according to Lesser (most advantageously in the form of clyster,) when the alvine evacuations cause great exhaustion, and appear peculiarly discoloured.

2. *Inflammations*, particularly of membranous, glandular, and sensitive organs, assuming a lymphatic character in the second stage, when the inflammatory symptoms are already removed, combined with calomel; (a) against *hepatitis*, with icterus, after venesection; against *gastritis venenata*, in the form of emulsion, to counteract the violent vomiting; against inflammation of the bladder (*cystitis*), with calomel, and under the form of clyster (P. Frank, Richter;) also against *pneumonia*, when, after antiphlogistic treatment, a state of irritation is left behind, characterized by great excitement, transient, lancinating pains, dry, teasing, spasmodic cough, small, accelerated, and spasmodic pulse, cool skin, &c. In such cases, opium (from a quarter to half a grain,) with small doses of ipecacuanha and camphor (and with calomel, if the inflammation be not yet quite removed,) rendered the most eminent services, according to P. Frank, G. A. Richter, S. G. Vogel, and Hufeland; this particularly refers to *rheumatic pneumonia* and *pleuritis*. Also against *pneumonia notha* (false inflammation of the lungs,) which is based on a spasmodic affection of the pneumo-gastric nerve, and on a profuse gathering of mucus in the bronchial vessels (with camphor, ipecacuanha, sulphur auratum, benzoic acid, and senaga.) (b) *Feverish exanthemata*, attended by exhaustion, dryness of the skin, if the eruption does not properly come out, or if it seems inclined to recede; particularly in *small-pox*, in the stage of eruption and suppuration (Sydenham, Richter, Reil, P. Frank—*non paucos ex Orci faucibus eripuit.*) with musk, succinate of ammonia, angelica, camphor; against *measles*, with diarrhoea, vomiting, violent cough; with great cau-

tion in *scarlatina*, on account of the frequent congestions towards the chest and head.

3. In *rheumatisms*, when without fever, and very painful, arising from suppressed perspiration; combined with ipecacuanha (Dover's powder,) camphor, and preparations of antimony, it is very advantageous. Late-ly, opium has also been used successfully (in large doses) against rheuma-tisms with fever; Cazenave orders pills containing 1 grain of opium, and continues them hourly (!) till the pain ceases, or perspiration ensues. Cor-rigan and Hope found opium likewise very useful against acute rheuma-tism. The excellent effect of opium in this disease was proved in one case, where 8 venesections during 12 hours (!) emetics, sal ammonia, nitre, calomel, &c., were all employed in vain, till at last Benewitz administered the aromatic tincture of opium (rising from  $\mathfrak{m}$  xx to 3 ss.) with antimonial wine and nitre, and afterwards a quarter of a grain of opium with calomel, ipecacuanha, and sulphur auratum, and experienced the best results. Not-withstanding this success of opium, it is indispensable to bear in mind the following excellent sentence of Wedel: "Sacra vitæ anchora est opium benè et circumspecte agentibus, cymba autem Charonis in manu imperiti et seu gladium in manu furiosi."

4. In *gout*, if the paroxysm occasions violent pains; or if it has receded towards the internal organs, opium may help to bring it back towards the skin (combined with ipecacuanha, camphor, antimony.)

5. *Catarrhal* complaints, when chronic and inveterate, with teasing cough and difficult expectoration (with antimony and mercury,) particu-larly when tending to pulmonary consumption, combined with bitter-sweet, liver of sulphur, &c.

6. *Morbid fluxes*. (a) In *dysentery*, with rheumatic catarrhal character, in harvest time, with little or no fever, opium must be employed as the chief remedy, with small doses of ipecacuanha and calomel; also in the nervous forms, accompanied with exhaustion, &c. Opium is, however, in-jurious in inflammatory dysentery, with fever or with gastrico-bilious com-plication. (b) *Cholera*, in the sporadic form (from six to twelve drops of the aromatic tincture every quarter of an hour, with some acetic ether;) also frictions on the gastric region, and clysters of opium; in the *epidemic* form, opium was only advantageously used against the lighter cases; whilst in the *asphyxiated* or *pulseless* modification, opium was even inju-rious, by the untimely stoppage of the secretions, as was shown in the late epidemic of cholera at Berlin (Autumn, 1837.) (c) *Diabetes* (with animal diet;) Baillie gives it with rhubarb; Berndt with ammoniuretred copper. (d) *Diarrhœa*, not caused by inflammatory action, particularly of a gastrico-rheumatic character, if very frothy, watery, and exhausting; also with great care during the period of dentition. C. Vogel recom-mends it against the diarrhœa, sleeplessness, emaciation, weakness, and convulsions, which generally precede softening of the stomach; Cruveil-hier, against gastric complaints, characterized by a peculiar state of the stool, resembling froth of eggs. (e) *Emesis* (vomiting,) purely spasmodic and nervous. (f) *Hemorrhages*, particularly of the lungs, and hæmoptysis (spitting of blood,) with ipecacuanha (Jahn says, "I do not hesitate to de-clare opium the most indispensable remedy in this disease;") and in spasmodic uterine hemorrhages (with tincture of cinnamon, elixir of vit-riol, &c.)

7. *Morbid retentions*, by spasmodic contraction of the vessels, and of the eductory canals. (a) The *icterus* of irritable, hypochondriacal individuals, after cold or mental excitement. (b) *Dropsy*, in consequence of receded eruptions, particularly anasarca and thoracic dropsy, combined with foxglove and calomel; also as an excellent corrective with squill and other violent diuretics. (c) In *painter's colic* it is the chief remedy, either by itself or with alum; sometimes with calomel, castor oil, or in a solution of sulphate of soda (Richter;) here it quickly removes the spasmodic obstruction. (d) In *spasmodic and flatulent colic* (with aromatics and naphtha). (e) In *retention of urine*, when spasmodic; also used in external frictions on the region of the bladder, together with warm oil of chamomile, and in clysters.

8. In *spasms and pains*, when caused by derangement of the primary nervous functions, particularly by morbid increase of the sensitive nervous actions, and comparative inaction of the irritable system, opium restores the original equilibrium, and is thus the chief remedy. Cullen particularly advocates it in his so-called "nervous lumbago," after previous local bleeding.

9. *Neuroses*, viz.—(a) *hooping-cough*, but only in the second or nervous stage; (b) *hydrophobia*, in large doses, as a preservative, after venesection has been carried to fainting; (c) in *trismus and tetanus* it is a chief remedy, particularly when they are traumatic or rheumatic, (Stütz gave it with carbonate of potash and potash baths,) in increasing doses, to begin with two grains, and increasing a quarter of a grain every hour; or twenty drops of the tincture and to rise five drops every hour, (in symptoms of poisoning black coffee is to be given along with it, and then again twenty drops of the tincture to be continued, Rust); in tetanus, proceeding from gangrena senilis, it is particularly praised by Wendt; (d) in *delirium tremens*, in large doses (from one to two grains every hour, till critical sleep appears; if complicated with plethora of the head, hard full pulse, and suppression of the usual secretions, venesection is to precede it; if with gastric symptoms, an emetic, particularly tartrate of antimony and potash; also in *madness*, not based on organic changes, but on suppressed perspiration, sexual excitement, &c. (then to be combined with camphor;) in spasmodic phenomena, fright, &c.

10. In *pulmonary phthisis*, with tormenting cough, profuse expectoration, and great sensibility; in the night perspirations opium is to be combined with acetate of lead.

11. In *gangrene*, with characters of debility, particularly in gangr. senilis and hospital gangrene, internally and externally.

12. In *sypilis*, with painful and spasmodic symptoms, (an important corrective with mercurial preparations,) particularly in nightly pains of the bones (in the form of acetate of morphia.)

13. In *poisoning by caustic metallic oxides*, if, after the use of proper antidotes, a state of heightened irritability and sensibility is left in the nervous system; also against poisoning by remedies of very acid principles (as veratrum album, helleborus, squill, colchicum, semen sabadill.)

14. *Externally*, (a) in all painful and spasmodic maladies, particularly spasmodic colic, pain through calculi (with warm chamomile oil,) painful erysipelatous affections, cancers, phymosis and paraphymosis, chordae, irritable gonorrhoea, leucorrhoea, and painful ulcers; (b) in some *eye complaints* it is a chief remedy, particularly in chronic ophthalmia left after

the acute inflammation, when great sensibility, lachrymation, photophobia, and spasm of the eyelids remain behind; and particularly in arthritic, syphilitic, blenorrhagic and metastatic ophthalmia; against varices of the conjunctiva, obscurations of the cornea (Lallemand,) ulceration, pannus, pterygium, staphyloma; it is also an excellent remedy in polypus of the nose, (the polypi are to be daily touched with laudanum, and covered with lint imbued in the same tincture,) polypi of the ear and uterus; *chilblain*, frost-bitten limbs.

**ART. 52.—Tobacco—a Cause of certain Diseases.** [Mr. Shipman has called the attention of the profession to a point which is not without interest in this country, although the "noxious weed" is not here used to the same reckless excess as in America. He thus relates his experience upon the subject:—]

In the year 1837, my attention was called to two cases of disease in the same family. The symptoms and phenomena attending them were so similar, that it struck me at once that they had a common origin. The first was that of a young gentleman, D. W., a student at law, of a nervous-sanguine temperament. He had been a martyr to dyspepsia for two or three years. He had spent a year in the Western States, and had attended the law lectures at Cincinnati. While at the west he had acute ophthalmia, which was treated by active depletion with little benefit, as his eyes, when I first saw him, were highly injected; cornea vascular and semi-opaque, and the lids granular. He applied to me for the treatment of his eyes, but what most afflicted him constitutionally was low spirits, want of resolution, and general hypochondriasis. His stomach would receive food with a good relish, but the moment he had finished his meal a train of nervous symptoms came on, which harassed him for two hours, until the stomach was empty. Acidity, cardialgia, gastrodynia, palpitation of the heart, giddiness, vertigo, and fullness of the head, with the most profound gloom; keenly alive to every feeling, he was in constant fear of death, yet tempted to commit suicide, to escape from a life more intolerable than death itself. These symptoms harassed him for months, with varying degrees of intensity, when a new symptom arose, which terrified him more than all the rest. His sleep had been broken by the most horrid imagery, in the shape of frightful dreams, for more than a year; but now, when the first hour of sleep came over him, he was suddenly awoken by a shock in the epigastrium, which started him in great alarm from his sleep. These shocks and startings were repeated several times in the course of the night, and as often as he fell into a slumber. They were at first confined to the epigastrium, but, after a few weeks, the sensation was transmitted to the head, which he described as more unendurable than when confined to the epigastrium. It was followed by a sensation as if a rush of blood took place to the head, and a firm conviction in his mind that he should die with apoplexy. This impression preyed upon his mind incessantly.

I was often summoned in the night in great haste, and found him agitated, with cold sweats, palpitation, and terrible apprehensions of immediate death. A little soothing encouragement, a dose of morphine and carbonate of ammonia, would dispel his fears and quiet his agitation, and enable him to rest the remainder of the night with tolerable composure. This state of things lasted several months, during which time he was not

in a condition to pursue any kind of business, and finding that medicines only gave him temporary relief, I suggested to him that tobacco might have some agency in his complaints (as he used it freely, by smoking, chewing, and snuffing), and advised him to abandon the habit. In this I was successful, so far as chewing and snuffing were concerned; but he was so much attached to his cigar, that it was a long time before he could be induced to leave that. I will here add, that from the time he left the habit of chewing and snuffing, his health in some measure improved, particularly the shocks and epigastric sinking. He now became satisfied that this partial abandonment of the habit had been productive of good, and renounced the habit entirely; and the nocturnal shocks and epigastric sinking, with the whole train of nervous affections, vanished as if by magic. His digestive powers gradually improved; the chronic inflammation of his eyes yielded readily to appropriate treatment; the gloom and despondency which had oppressed him as an incubus, cleared away; the nervous palpitations and rushings of blood to the head subsided, and he was able to prosecute his studies with energy, was admitted to the practice of the law, and is now an able and talented member of the bar, in the possession of good health, spirits, and prosperity. The foregoing history I copy from my notes taken at the time. There were many other symptoms which are common in dyspeptic cases, and many of those described are found in every-day practice in nervous dyspeptics and hysterical habits. The sudden and complete cure of all the symptoms, on leaving off the use of tobacco, was too obvious to escape the observation either of patient or physician.

I will now briefly allude to the case of a sister of the gentleman whose case I have been describing, although not occurring in the order of my notes. She was married, and the mother of two children; her age, 39; dyspeptic for the last 10 years; of a nervo-sanguine temperament; her youngest child ten years of age. Suffered since her last accouchement from leucorrhœa, partial prolapsus uteri, and hypochondriasis. Has smoked and snuffed tobacco for the last 15 years; eight years ago began to have shocks at the epigastrium, with a sinking sensation at the pit of the stomach, cardialgia, acid eructations, a sense of rushing of blood to the head, palpitations, sleeplessness, and startings when first falling into slumber. These kept increasing upon her, when there came on tenderness of the spine along its whole length, but more especially in the cervical and lumbar regions, rigidity of the limbs, costiveness, derangement of the catamenia, &c. She had been under treatment for a long time, with little or no benefit. To soothe her feelings, she had taken more freely of snuff, and had smoked more often, as she fancied that it gave her temporary relief. Seeing the good effect from abandoning the use of tobacco in her brother, she made the same experiment in part herself, and with the same marked relief from many of the symptoms. The shocks at the epigastrium left her, sleep became quiet, her mind more cheerful, and the epigastric sinking, cardialgia, acidity, and eructations, were greatly relieved. The spine, however, required cupping and counter-irritation, and, with the use of anodynes and tonics, she recovered a comfortable state of health. This patient has frequently ventured upon a moderate use of tobacco since, but after using it awhile, she experiences, though in a slight degree, her old feelings, and then quickly abandons it. She is perfectly satisfied of

its pernicious influence upon her constitution, and therefore, is in little danger of carrying its use again to excess.

S. E., æt. 40, was in possession of good health until 1838, when he began to emaciate and grow pallid; his food did not digest well; with acidity, heartburn, gastralgia, palpitation of the heart, sinking at the pit of the stomach, and a host of nervous symptoms; gloom, hypochondria, and apprehensions of sudden death. But what most amazed him, and which filled his cup of misery full, was shocks at the epigastrium, which attacked him when first falling asleep every night. These followed him two years, and increased to such a degree that his sleep was a succession of starts, which nearly wore him out. At the end of two years they came upon him during the day. He described them as like shocks of electricity, and confined to the epigastrium. He was incapacitated from business of any kind, was weak, irresolute, and desponding; had consulted many physicians, and taken a great variety of medicines, with only temporary relief. On his giving me a history of his case, I was struck with its similarity to that of D. W., and inquired if he was not in the habit of using tobacco. He stated that he was, and had sometimes imagined that it might have some agency in producing some of his bad feelings, but had never had any physician advise him to leave it off, and, in reality, was too much a slave to its use to lightly make the sacrifice. Upon my assuring him that the symptoms and disease depended upon the habit, and that nothing but a complete and total abstinence from it would restore him, I extorted a promise that he would lay it aside a month at least. As he was costive, I prescribed the compound syrup of rhubarb, and directed him to call again in a month. At the end of that time I was agreeably surprised to witness the improvement in the appearance of my patient. His countenance, which had previously exhibited a sallow, pallid aspect, was now ruddy with health and strength; he had gained fifteen pounds of flesh in the time, and his strength had increased daily from the time I last saw him. But what to him was more than all the rest, the annoying shocks, with the general nervous agitation attending, had entirely left him from the third day of his abstinence from tobacco. The dyspeptic affection, the palpitation, the gloom and depression of spirits, the apprehensions of death, had vanished as if by enchantment. He had resumed his business (that of a farmer; ) he could now sleep quietly through the night, and get up in the morning refreshed and buoyant in spirits, and is so convinced that tobacco was the root of all his previous complaints, that it requires no advice to induce him to for ever refrain from its use. This man has now the most perfect health, and has taken no medicine since the first month.

C. P., æt. 43; nervo-bilious temperament; farmer; temperate; has been a tobacco chewer for 20 years; has been dyspeptic the same period, more or less, attended with nervous palpitation and acidity, hypochondriasis and epigastric sinking. First began to have shocks at the epigastrium in 1839, in the night, on first getting asleep, which started him up in great agitation and alarm; was frequently obliged to get up and sit, for fear of the shocks. On his consulting me, I advised him to discontinue the use of tobacco, and prescribed no medicine. He left it off and the shocks immediately subsided. He did not resume the use of tobacco again for 18 months, and was healthy during the time. Being of an irresolute disposition, he resumed its use again, and in two months the shocks began with great severity. They were now felt in the chest and region of the

heart, at first always in the night, but after awhile in the day-time, with a rushing of blood to the head, which would momentarily deprive him of consciousness. The shocks now took place in the head. This so terrified him that he earnestly besought me to prescribe something for him, and agreed to abide by my advice. My opinion was, that no medicine would be of the least service without a complete abandonment of tobacco. This he solemnly pronounced he would do. I prescribed the compound syrup of rhubarb, with the ammoniated tincture of valerian. The shocks at once left him, his sleep became quiet, his dyspeptic symptoms disappeared, his mind became calm, spirits elastic, and he was capable of working his farm. Two or three times since he has cautiously ventured on the use of tobacco, but, after a certain length of time, his old feelings begin to appear; so that it is reduced to a demonstration that tobacco was the sole cause of his former troubles. This man has increased 15 pounds in flesh, and his colour, from being sallow and pale, is of a ruddy hue.

S. C., æt. 63, farmer; robust and healthy, until four years ago, when he began to complain of epigastric sinking, sleeplessness, palpitation, irritability, and nervous tremors. Shocks at the epigastrium came on at the first hour of slumber, which were repeated several times in the course of the night, and often in the morning before breakfast. Has been a tobacco chewer thirty years, and a portion of the time, to great excess. On his consulting me, I suggested that tobacco was the agent in all the trouble which he experienced. He said he had often suspected it, but had never had fortitude and resolution to forego its use, but agreed to make trial. The shocks immediately left him, together with all the train of nervous affections; his sleep became calm, his strength and flesh returned, his spirits improved, and he has gained twenty pounds of flesh in three months. He has not resumed the use of tobacco. This man was temperate in all things except tobacco, neither using tea nor coffee. He was sensible for years that something was wrong, but could not believe that an article in such universal use as tobacco, and one which he had used for a long series of years, could possibly cause his troubles. This, I am persuaded, is the case with hundreds who are similarly situated.

S. J., æt. 54; nervous temperament; farmer by occupation; has been in the habit of using tobacco for ten years. It frequently has salivated him. He spits much, is emaciated, nervous, and hypochondriacal. The shocks commenced about two years ago, in his bowels. They came on in the night, when first getting into a drowse; at length they came on in the day-time, with epigastric sinking, costiveness, and dyspepsia. I put him on the use of the compound syrup of rhubarb and ammoniated tincture of valerian, and, at the same time, he left off the use of tobacco. The shocks immediately left him, and he improved gradually, so that at the present time he is in comfortable health.

A. C., æt. 27; is of a sanguine temperament, and robust habit; a farmer by occupation. Has chewed tobacco for four years to excess; was taken, in the summer of 1841, suddenly, with sinking at pit of stomach, and faintness, which obliged him to lie down in the field. Shocks at the epigastrium came on about the same time. These were first at night, on getting asleep, but after awhile in the day-time; at these times he would suddenly break out into a profuse perspiration. His digestion was tolerably good, and his health otherwise little impaired. He says that, previous to these symptoms, he had used large quantities of tobacco, but never



imagined that it could hurt him. I advised him to immediately discontinue its use, which he did, and the shocks and faintings left him at once, and have never returned. This man took no medicine.

Rev. Mr. H., æt. 30; of a nervo-sanguine temperament; addicted to the use of tobacco fifteen years. For many years he was troubled with epigastric sinking, and lately with shocks in the same region. He is in tolerable health in other respects, and, but for the annoyance which they occasion him when first getting asleep, would not think of asking medical advice. I recommended him to quit his tobacco, which he did, and a perfect cure was the result.

J. S., æt. 40; of a nervo-bilious temperament; followed the sea many years; commenced smoking for spitting up his food: soon commenced chewing, and carried it to excess, often using a pound a week. Five years ago, began to feel a sinking sensation at the pit of the stomach; then starting from his early slumbers, with a shock through the epigastrium, and sometimes chest; a rising sensation, like an aura, to his head; oppression at the chest great, and sudden difficulty of breathing, palpitation, choking, sudden faintings, unquiet sleep, frightful dreams, dyspepsia, and hypochondriasis. From being strong, robust, and resolute, he became weak, nervous, and timid. In this condition he applied to me for advice. It was with great difficulty that I could persuade him to quit his tobacco, and when he attempted it, was often a backslider. But soon he perceived the good effects, and was at length induced to lay it entirely aside, and with it went all his former bad symptoms. I have since ascertained that he was somewhat addicted to the use of ardent spirits, which may have contributed in a measure to some of the complaints.

*Remarks.* I might multiply cases, that have fallen under my observation, to demonstrate the fact, that tobacco is capable, in certain constitutions, and under certain circumstances, of producing a specific set of phenomena, which are peculiar and pathognomonic. All the symptoms are more or less attendant on dyspepsia, hysteria, and hypochondriasis. But the shocks at the epigastrium are so prominent a symptom, and so uniformly left when tobacco was abandoned, as to constitute a striking peculiarity. The habitual use of any narcotic is liable to produce derangement of the digestive organs, and, through that, a long train of nervous derangements, which baffle the skill and tire the patience of the physician. The digestion once impaired, the great nervous or ganglionic system takes on a chain of sympathies, which are often at a distance from the first organ affected.

The habitual use of tobacco, when not carried to excess, does not always produce disease, and perhaps we may say that it does not generally do so. From the nature of the substance, and its peculiar narcotic properties, an individual cannot start off at once on a free and liberal use of it. Nature has so fashioned us, that when we transgress her bounds (especially in reference to tobacco), we are reminded by nausea, of the extent we are allowed to go. If it were not for this, how many would destroy themselves before a habit could be formed, rendering its employment so safe that large quantities can be taken almost with impunity. It is the same with all narcotics. Opium, for instance, can be taken if a habit is once established, in immense quantities, and apparently with little harm. Still, there are constitutions that have long held on under the use of narcotics, that will receive gradually, and almost imperceptibly, an injury which nothing can

remedy, so long as the pernicious habit is persisted in. This is emphatically true as regards the use of tobacco. The martyrs themselves little suspect the secret enemy that is sapping the foundations of health and life. They have been accustomed to it, perhaps, from childhood. Their grandfather, father, and brothers, have used it before them. They never heard a word spoken in disparagement of it, and their own inclination is a powerful advocate for the pernicious article. Perhaps, too, their physician has spoken a good word in favour of their common friend, which has done much to establish it still stronger in their good graces. They may, however, now and then have some misgivings, as they lay awake night after night, taking an inventory of their wretched feelings; but this is laid to the charge of dyspepsia, or the wear and tear of business, until finally they ascertain the true cause, or some acute malady comes to their relief, which, while it lasts, compels them to abandon (for a while, at least) the article, while nature re-asserts her violated laws.

As a general rule, those who use tobacco to excess are much troubled with wakefulness; and when they do sleep, it is not "tired nature's sweet restorer," but a succession of broken slumbers, interrupted by startings and disagreeable dreams. Excessive smoking has been known to produce a state of the system in all respects similar to delirium tremens. Most of the narcotics, I believe, when habitually indulged in, render sleep broken and disturbed with dreams of frightful imagery.

I am not disposed to condemn the use of tobacco in toto, for I am not certain that in many constitutions and temperaments it may not be of some service, or at least, that it may not be free from harm; but in those of a nervous temperament, predisposed to dyspepsia and hypochondriasis, I am certain that it is capable of, and generally does do, a vast deal of harm, and is productive of an amount of bodily and mental suffering, which few men are willing to encounter a second time. Every physician of much experience in chronic disease, cannot fail of seeing, in some of the cases which I have attempted to sketch, a portrait of many a wretched patient, who has, with eloquence and painful minuteness, dwelt on his sufferings, his fears, and his fancies. Such cases have generally been called dyspepsia, and have been drugged and dieted, or sent off on foreign travel, carrying in their waistcoat pocket the Pandora's box of all their woes.

*Boston Medical and Surgical Journal and Medical Times.*

**ART. 53.—Chromic Acid in Hemorrhoids.** [Mr. Ure relates the following case in proof of the efficacy of chromic acid in ulcerated piles. He explains its action, upon the principle that it readily yields oxygen to organic substances, being reduced to the state of sesquioxide. It is very convenient for application, as it consists of a thick crystalline pap; the escharotic action of which, when properly applied, does not extend beyond the prescribed limits:—]

S. L., æt. 31, tailor. At the verge of the anus is a dark hemorrhoidal tumour, the size of half a walnut, ulcerated, and extremely painful. The tumour had been protruded several days, and had resisted various attempts at reduction. The patient was greatly reduced by continual suffering from which he could only obtain a respite by preserving the bent posture. The bowels were open. The chromic acid was freely applied to the ulceration, on the 27th of April; on the 29th, a considerable slough had separated, and the tumour had considerably shrunk in dimension. Some pain was felt for

a few hours after the application of the acid, but he was completely cured by May 13th.

A second case is related, which was equally successful.

*Medical Gazette*, March 21, 1845, p. 787.

**ART. 54.—Terchloride of Gold in Rheumatic and Gouty Affections.** This substance made into an ointment with lard, has been found to relieve rheumatic and gouty pains with great certainty. It tinges the skin purple, but this stain is readily removed by ablution with urine.

*Medicinische Zeitung*, No. 11, 1844.

**ART. 55.—On the Employment of the Extract of green Walnut Shells in chronic enlargement of the Tonsils.**—A little boy, who had long been the subject of this troublesome affection, was brought to Dr. Becker, of Munhausen (Prussia,) for advice. He was recommended to use the following prescription as a lotion externally, and as a local application to the tonsils :—

R. Extract of walnut shells, 4 grammes.

Warm water, 64 grammes.

Mix and dissolve.

*Gazette des Hôpitaux*, Feb. 13. 1845.

**ART. 56.—Formula for Sarsaparilla Broth.**—Recommended by Dr. Egan, in phagedenic ulceration :—

R. Decoct. sarsæ comp., Oiss.

Carnis bovini, lb. ss.

Coquæ simul super lente igne ad dimidium, et sumatur quotidie.

*Dublin Med. Journal*, Jan. 1845.

**ART. 57.—Formula for the Peroxide of Iron, an Antidote for Arsenic.**

Sulphate of iron, 1000 parts.

Sulphuric acid (sp. gr. 1.847,) 200 parts.

Water, 4000 parts.

Nitric acid, q. s.

" Dissolve the sulphate of iron in the water, add the sulphuric acid, and boil ; then add the nitric acid until all effervescence ceases, and red fumes are no longer emitted ; let the mixture cool, and add twenty or thirty times its weight of water ; then precipitate the iron by adding ammonia in excess ; wash the precipitate till it ceases to render aqua baryta turbid, and preserve it in a gelatinous state.

*Medical Times, Pharmaceutical No. for March*

**ART. 58.—Tincture for the Treatment of Alopecia.**—Dr. Landerers speaks highly of the following prescription for the restoration of the hair ;—Leaves of the cherry laurel, 60 grammes ; cloves, 8 grammes ; tincture of lavender, 180 grammes. Digest for six days, filter, and add 15 grammes of sulphuric acid. The bottle should be kept hermetically sealed. The bald parts are to be rubbed daily. The effect is perceptible in six or seven applications.

*Zeitschrift für die Gesamte Medicin*

**ART. 59.—*New Cement for the Teeth.***—M. Ostermayer proposes a cement which he considers to approach very nearly to the composition of enamel : it consists of quicklime, 13 parts ; anhydrous phosphoric acid, 12 parts. The lime must be finely pulverized, and chemically pure. The anhydrous phosphoric acid is obtained by the combustion of phosphorus in dry air. The two substances are to be quickly mixed together, so as to form a powder. This is to be introduced into the cavity of the tooth, previously dried, and to be moistened with a small quantity of water.

*Encyclographie des Sciences Médicales*, Jan. 1845, p. 37.

## PART II.

# SURGERY.

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### SECT. I. SYMPTOMATOLOGY AND DIAGNOSIS OF SURGICAL DISEASES.

ART. 60.—*On the Diagnosis of Aneurism.* By Professor MILLER.\*

THE diagnosis of aneurism is one of the most important points in practical surgery. The following considerations will generally enable us to escape from error. Chronic abscess, and glandular or other tumours, are the morbid states most apt to assume the aneurismal characters. They often, especially the latter, stimulate the disease very closely, strong and distinct pulsation being communicated by a neighbouring artery of large size. But:—

1. Aneurism is soft and compressible from the first, and then becomes hard by the solidification of its contents. An abscess may be soft from the first, but more frequently begins with induration, and softens secondarily, reversing the progress of aneurism. A small chronic scrofulous abscess may be soft from the first, and seem to be compressible, when situated for example in the groin, axilla, or root of the neck, it may seem to disappear by pressure beneath the surrounding hardness, but on removing the pressure, the lively resiliency of the aneurism is wanting. An enlarged gland or other tumour is invariably, first hard, then soft, and never capable of being dispersed by pressure, and unless suppuration occurs, softening and fluctuation do not supervene at all.

2. Pulsation is equable in aneurism. At every point the pulsation is equally distinct; whether the tumour be compressed directly downwards, or laterally, the pulsation is the same. A swelling not aneurismal, laid over the back of an artery, and receiving impulse from it, has a very distinct pulsation when the first mode of pressure is employed, but when raised and held by the sides, the pulsation will be found to be either very faint or altogether absent.

3. Pulsation of aneurism is felt from the first. Not so in the case of tumours not aneurismal. At first they are small, and not encroaching upon the vessel, they receive no impulse; only after a time do they enlarge to such an extent, as to lie in close contact with the artery, and receive its pulsation.

4. Aneurism has expansion coincident with pulsation. The fingers placed firmly on the tumour, diminish it more or less; the pulsation is felt increasing in proportion to the pressure employed, and at each impulse

\* Principles of Surgery, by James Miller, Esq., F.R.S. p. 439.

there is a palpable elevation of the hand, by expansion of the walls of the cyst. A swelling not aneurismal, on the contrary, may have its apparent impulse augmented by increase of pressure; but it can never have expansion of its entire bulk at every point; it is simply raised, and whether in systole or diastole, its dimensions are unaltered.

5. An aneurism ordinarily yields both thrill and bruit to touch and auscultation. Another tumour may possess the latter, but has not both conjoined.

6. Pressure on the cardiac aspect of the aneurism diminishes its pulsation, bulk, and thrill; pressure on the distal aspect has precisely the contrary effect. Another tumour may have its apparent pulsation similarly affected, but its pulsation only.

7. Change of relative position affects the aneurism but little; it is not so with other tumours.

8. Perhaps the tissues are lax enough to permit of the vessel's course being traced by the fingers. If the tumours be aneurismal, it will be impossible to detach it from the artery, if non-aneurismal, the vessel will be found at all times perfectly free.

**ART. 61.—On the Diagnosis of Fracture. By Mr. GRANTHAM.\***

Although the following method is by no means new to the English surgeon, it is at present but seldom adopted. "The stethoscope applied over the place of fracture, in the slightest motion of the part, conveys a much more decided crepitus than is perceived by the naked ear during the most extended movements of the part. In many cases, even the slight pressure of the ear on the stethoscope, suffices to produce the crepitation, a circumstance of no small importance, as freeing the patient from the pain necessarily excited by the motion requisite in the manual examinations. The crepitus yielded by the more solid bones is sonorous, and resembles the sound produced by breaking a piece of wood across the knee; it is accompanied with a sensation of roughness unpleasant to the ear. The sound yielded by the more spongy bones is duller, and resembles the effect of a rasp on wood; except that now and then this noise is broken by sounds of a clearer kind, like those afforded by the compacter bones, only not so loud. The sound from oblique fractures is stronger than from those which are transverse; but when one end of the fractured bone rides over the other, the sound is then obscured, and, in some cases, may not be perceived without slight extension or counter-extension of the limb. If the fracture is comminuted, the sensation, as of distinct portions of the bone, is conveyed by the stethoscope. When fluids are effused around the fracture, a gurgling is combined with the crepitation, and which is compared to the sound produced by a shoeful of water." (Lisfranc.) A dry crepitus rattle is produced by inflammation of the cellular structure, wherein the serum becomes suppressed, and the cells distended with air, which may be mistaken for the crepitus arising from fracture. It is much louder, and may be distinctly heard by the patient or bystander; it is heard by making gentle pressure with the fingers, or end of the stethoscope, over the injured part; it is most distinct on the third day, and decreases on the fifth; it is a sound apt to be mistaken for fracture of the fibula. We have a sound

\* Facts and Observations on Medicine and Surgery. London, 1845. p. 61.

like this in the common subcutaneous emphysema, on pressing uninterruptedly with the hand on the affected part.

**ART. 62.—*Diagnosis between Coxalgia and Neuralgia.*** M. Piorry recommends percussion of the great trochanter, as a means of diagnosis between neuralgic pain of the hip and coxalgia. If this manœuvre increase the pain, the case is one of the latter disease. He finds this method more significant than pressure from the sole of the foot.

*Gazette des Hôpitaux*, April 10, 1845.

**ART. 63.—*Dissection of a Partial Dislocation of the Shoulder upwards.***

By ALFRED SMEE, Esq., Surgeon to the Royal General Dispensary, &c.

(*Lancet*, March 22, 1845.)

The numerous accidents to which the human frame is of necessity liable in a country where every kind of machinery abounds, and where force is continually applied to the body in every possible direction, affords us opportunities of observing, not only the natural processes of restoration, but also enable us to draw conclusions on the physiology of various parts of the body.

2. An interesting instance of this character has lately occurred at the Aldersgate School of Medicine; for on the dissection of a body, the opportunity of examining the rare dislocation of the shoulder upwards was afforded. The student, Mr. Lloyd, who had charge of the arm, discovered, after he had removed the deltoid and made a slight incision into the cellular tissue, underneath, a very remarkable appearance, to which he at once requested my attention. Upon a careful examination, we found that the upper part of the great tubercle of the humerus, instead of being used for the attachment of the muscles, was converted into an articular surface, around which the cellular tissue was a little thickened, to form a sort of feeble capsular ligament. The surface corresponded to another smooth surface formed on the acromion, partly on the under surface of the acromion itself, and partly by new bony matter, extending from one eighth to half an inch into the tendon of the deltoid. Although these two articular surfaces were not so even as the normal articular surfaces of a joint, yet they were smooth, and glided on each other without any catching or sensation of asperity.

3. If the great tubercle was converted into an articular surface, the parts usually attached to it must have been removed, and accordingly we found, on examination, that the tendons of the supra-spinatus, infra-spinatus, together with the capsular ligament, were torn from the tubercle; and a piece of bone still left attached to the ruptured margin of the tendons indicated that the tubercle itself had suffered more or less injury from the accident. The parts thus forcibly detached left a gap, through which the cavities of the normal and abnormal joints mutually communicated. The concentric edge of the ruptured parts was perfectly smooth, and lined with a kind of synovial membrane below and above. The piece of the great tubercle inclosed with the tendons was rounded, and consequently presented no impediment to free motion in every direction.

4. The head of the humerus with its articular surface was perfectly healthy, and the glenoid cavity was also perfect. The head glided freely in the glenoid cavity, and the capsular ligament at the lower part was

entire. The subscapular muscle was inserted, as usual, into the lesser tuberosity, the teres minor into the inferior portion of the great tubercle, and the tendon of the biceps was attached to the neck of the scapula.

5. Besides however the spinati, or two superior capsular muscles, the long head of the biceps must be considered as a muscle destined to regulate the motions of the joint in a proper direction, and that tendon was found ruptured, as well as those of the former muscles. In the process of separation, the ruptured end had adhered firmly to the biceptal groove, and consequently had lost all immediate influence on the joint itself.

6. From the above dissection, we are in a condition to infer the probable nature of the accident at the time of its occurrence, and it is apparent that the tendons of the spinati and the capsular ligament were torn from the great tuberosity, and the tendon of the biceps ruptured. The general effect of the accident was to produce an opening into the joint under the deltoid. We have not the slightest ground for supposing, from this dissection, that any other injury occurred, to the joint besides that which we now find. That some other injury might have occurred is far from impossible; but we wish clearly and emphatically to point out that no evidence of such accident was indicated.

7. Such, then, was the probable nature of the accident at the time of its occurrence; but we must now study the effects which were produced in the process of restoration. We find that nature was unable to fill up the gap produced by the laceration of the capsule, and that the attachment of the muscles to the great tubercle was not restored. The edge of the lacerated ligament and tendons was rounded, presenting a crescentic margin, the concavity of which was turned to the great tubercle, and the two horns firmly joined to the bone. The aperture therefore existing between the two joints was bounded by this semilunar fold internally, and the great tubercle externally. In the process of separation, several strong tendinous bands were formed in connection with this semilunar fold, which acted as accessories to strengthen the capsular ligament, which remained entire. These bands, however, were closely combined with the capsular ligament, and did not in any way interfere with the free movements of the joint. I have before mentioned that the tendon of the biceps was united to the biceptal groove.

8. Such were the only changes indicated in the joint itself, and it is a remarkable and important fact that it should not have suffered any injury in structure, in fact, no change of texture, from its attempt to repair an injury caused by the terrible violence to which it must have been of necessity exposed.

9. The effect of this accident, however, was to destroy part of the curious mechanism by which the head of the humerus is compelled to play in the glenoid cavity; and the result exhibited in this case showed, most incontrovertibly, the influence of the spinati and tendon of the biceps on the position of the joint. Upon the division of these muscles, there was nothing to prevent the humerus from rising to the acromion under the action of the deltoid, and it rose accordingly to that position. The great tubercle on every movement of the arm pressed against the acromion, and in that way a new joint was formed between these two parts, a little cellular tissue being thrown around to form a capsule.

10. Regarding the total alterations in the joint, arising from the injury, as a whole, we find that the shoulder-joint was converted into a double



joint, one joint existing between the head of the bone and the glenoid cavity, the other between the great tuberosity and the under surface of the acromion. Inasmuch as the head of the humerus was moved from its place it must be regarded as a dislocation; but as the removal of the head from the glenoid cavity was incomplete, we must term it a partial dislocation of the humerus upwards.

11. The two joints cannot be regarded as having opposite properties, for in reality, if carefully examined, we find that the bone glides in the two articular surfaces at one time. Their general effect combined, is to render, not only the surface of the socket, but also that of the ball of this ball-and-socket joint more extensive, and thus this injured shoulder was converted into a joint possessing more of the characters of the hip-joint than usual; in fact, if this new joint had been continued to the glenoid cavity behind, and extended laterally, it would have formed a perfect socket. It was not, however, so extensively changed, and but a small piece of the socket alone was added. A very important object is fulfilled by the socket of the shoulder-joint being of so small an extent, for in that condition it can admit of a much greater variety of delicate motions. The addition of another portion to that socket, doubtless, more or less partially interfered with the functions of the joint, though from the post-mortem appearances, we are hardly in a condition to ascertain the extent of deviation from the natural standard.

12. This, unquestionably, must be regarded as an extremely rare accident, and must have been the result of considerable force applied in a peculiar manner. There is only one point in the case which can at all throw light on this part of the investigation, and that is, the presence of a fracture of the clavicle, on the same side which had united. We are unable to ascertain whether the fracture took place simultaneously with the other injury; but, supposing it to have occurred at the same time, we should be justified in inferring that this accident was not complicated, at the time of its occurrence, with any of the ordinary forms of dislocation, because the fracture would have seriously interfered with its reduction.

13. There is, as far as I know, but one other dislocation of the shoulder upwards, the dissection of which is recorded. This preparation is preserved in King's College Museum, and the account, by Mr. Soden, is published in the *Medical and Chirurgical Transactions*. In this case, the accident differs materially from that which I have just described, inasmuch as the only accident to the joint was a dislocation of the tendon of the biceps, which allowed the head of the bone to be drawn to the acromion. Taking these two cases together, we obtain the following physiological conclusions:—first, that the tendon of the biceps is sufficient alone to keep the head of the bone from rising from its situation, or, at any rate, contributes principally to that object. Secondly, that the supra and infra spinati have no influence in driving the head of the humerus under the acromion, inasmuch as it was drawn in that situation when these muscles were divided.

14. Supposing such an accident should again occur, we might inquire what probably would be the symptoms from which we might derive our diagnosis. In the first place, there must be a slight shortening of the limb, and its axis would also be slightly altered. When the arm was drawn close to the side, the head of the bone would be more prominent than usual under the deltoid muscle. The tubercle would probably grate against the acromion, in abduction.

15. I do not see how this dislocation could be confounded with any of the more usual forms, though we might anticipate that, inasmuch as the indications not being very prominent, it might possibly escape the attention of the surgeon altogether.

16. If the surgeon had clearly satisfied himself that this accident existed, what treatment ought he to pursue? Pathology indicates relaxation of the deltoid, relaxation of the supra and infra spinati, and relaxation of the long head of the biceps. We can effect all these objects by throwing the arm of the affected side behind the head, so that the fingers touch the opposite shoulder. It might be kept in that position by a bandage fastened to the wrist of the affected side, and carried round the axilla of the opposite shoulder. In the application of the bandage, we must remember that the entire weight of the arm will be supported by it, and on this account it would be necessary to pad the axilla, and to be careful that the weight does not injure the wrist. The use of these very simple means for two or three weeks would probably cause the gap to be very small. Perhaps such a treatment might be adopted with rupture of the tendon of the biceps or the spinati; for to bandage the arm to the side, in these cases, would widen the gap, and cause mischief.

17. This line of treatment would not be applicable when the accident is complicated with fracture of the clavicle, as it would tend to increase the tendency of the end of the bone to overlap. Probably the rarity of the accident depends upon the expenditure of force by the fracture of the clavicle, which is more easily effected than the rupture of the tendons.

18. For the sake of information, I have examined the account given by Sir Astley Cooper, of such cases of dissection of dislocations of the shoulder-joint which have either come under his own observation, or which he has collected from the labours of others. He describes two dislocations into the axilla, in both of which the subscapular is torn, and in one the tendons of the spinati and teres are more or less lacerated. The case before us differs from both those recorded by Sir Astley Cooper, in having the subscapular entire, and from one, in not having the teres injured, but in having the spinati completely instead of partially ruptured.

19. In one dissection of a dislocation, the tendons were all perfect, and in another, the spinati and subscapularis were completely detached from their tubercles. Our present case differs in having the subscapular entire, from that in which tendons were ruptured.

20. But one account is given of a dislocation backwards, and in that case the subscapular was torn.

21. One case is narrated of a dissection of a partial dislocation under the coracoid process, where all these muscles were entire.

22. In all those four cases recorded by Sir Astley Cooper, in which rupture of the tendons occurred, the subscapular partook of the injury, but in the case before us the subscapular remained injured. From this remarkable peculiarity, I think that the opinion is strengthened, that force was applied in a manner differing from that required to produce the other and more ordinary forms of dislocation.

23. There is no similar preparation in the Royal College of Surgeons of England, and with the exception of Mr. Soden's, in King's College, London, which differs materially from it, as far as I know, it has no precedent. The partial dislocation upwards of the shoulder-joint, of itself, is sufficiently rare to demand its publication, but inasmuch as this rarity is rendered

still more uncommon by being accompanied by a false joint between the great tubercle and acromion, it becomes still more deserving of being recorded as one of the accidents to which this part of the human frame is liable.

[A similar lesion is described by Mr. Potter, as occurring to him in the dissecting-room of University College. As will be seen, he differs somewhat from the opinions of Mr. Smee. In this example :]—

“The capsular ligament was extensively ruptured on the outer aspect of the joint, between the tendons of the sub-scapularis and supra-spinatus muscles. The opening, large enough to allow the head of the humerus to pass readily through it, communicated with a large bursa, which lined the under surface of the acromion, forming a species of false joint between that process of bone and the upper and outer part of the head of the humerus. The long tendon of the biceps was torn through, near its origin, from the margin of the glenoid cavity ; it appeared to have retracted, and was closely united to the bicipital groove by means of slender semi-transparent shreds, attached somewhat after the manner in which the columnæ carneæ are attached to the walls of the heart. The tendons of the supra-spinatus and infra-spinatus muscles were stripped completely from their natural insertion into the upper part of the great tuberosity of the humerus, but retained their connection with the teres minor, through the medium of which they were indirectly attached to the neck of the bone. The supra-spinatus muscle was pale and atrophied, and forced to pass in a curved direction round the head of the humerus, leaving its upper part bare and rough. No ulceration appeared on the surface of the cartilage, though its margins were fringed with numerous little fleshy projections, as if lymph had been deposited there, and organized, during the process of repairing the injury, in the capsular ligament.

From these appearances, I concluded that the primary injury had, in all probability, been a dislocation of the head of the humerus forwards and upwards ; and should the subject be deemed one of sufficient interest, I may perhaps be allowed to add a few remarks on the kind of evidence that induces me to offer this as a probable explanation of the accident in both cases.

The circumstances which determine Mr. Smee in concluding that the primary dislocation was directly upwards, appear to be :—

1st. The situation of the rent in the capsular ligament.

2d. The actual position of the head of the humerus.

3d. The formation of a false position between the head of that bone and the under surface of the acromion.

But are such conditions peculiar to, or distinctive of, this form of dislocation ?

1. The situation of the rent in the capsular ligament would seem to allow most easily of an ascent of the humerus towards the acromion, in the vertical position of the arm ; but it would as readily permit the head of the bone to pass forwards and upwards, provided the axis of the shaft of the humerus happened to be in that direction at the moment when a displacing force was applied to the point of the elbow. Under such circumstances, the tendon of the sub-scapularis, if sufficiently strong to resist the rending force, would turn the head of the bone slightly upwards, at the same time drawing the outer part of the capsule somewhat forwards, the

effect of which would of a necessity be a tendency to rupture of the capsule between the tendons of the sub-scapularis and the supra-spinatus ; in fact, at the point at which the actual rent was found in the dissections before us. As a case in point, I may refer to a dissection of a recent dislocation of the shoulder forwards, related by Sir Philip Crampton, (in the *Dublin Journal of Medical Science*, vol. iii,) in which the rent was distinctly in the situation above indicated.

2. The position of the head of the humerus, immediately under the acromion, might, I conceive, have been assumed after the reduction of a dislocation forwards ; and would, in all probability, occur in such a case as the present, in consequence of the want of resistance to the inner portion of the biceps, the long head of the triceps, the coraco-brachialis and the deltoid, muscles usually offered by the long head of the biceps and the outer portion of the capsule. In support of this opinion, we find that (as in Mr. Soden's case) mere displacement of the tendon of the biceps, with slight laceration of the capsule, is sufficient to allow of the close application of the humerus to the under surface of the acromion. Where the injury in the capsule is still more extensive, the tendency of the muscles (in abducting or rotating the arm, for example,) would be, to draw upwards the head of the humerus, until, meeting with the acromion, it might find sufficient "point d'appui" for its further movements.

3. The formation of a false joint under the acromion, in consequence of the attrition exercised upon it for a considerable time by the head of the humerus, is by no means an uncommon circumstance. Amongst collections of diseased bones, it is not rare to find porcelainous deposits on the under surface of the acromion, as well as on the articular surfaces naturally entering into the formation of the shoulder-joint. In the museum of University College, for instance, there are six specimens illustrating this fact. And to come more nearly to the point, of five old dislocations of the shoulder, examined and described by Mr. Smith, (*Medical Gazette*, vol. xiv,) in which the long tendon of the biceps was ruptured, no less than four presented this appearance on the acromion. In two other cases of dislocation, described in the same paper, no such false joint existed, but in both these instances the tendon of the biceps remained entire, though displaced from its groove.

These three conditions can, then, only be considered as evidence that the head of the humerus was thrown in an upward direction, but nothing further. Let us next inquire what facts should assist us in determining whether it was originally *directly upwards*, or *upwards and forwards*.

The first circumstance tending to throw a doubt over the former of these two suppositions, is the vast amount of injury inflicted on the ligaments and tendons around the joint, without any corresponding evidence of violence having been exercised on the acromion process. For although, in Mr. Smee's case, fracture of the clavicle was found on the same side, there is nothing to prove that it occurred at the time of the dislocation : nor is it the precise kind of injury that would be likely to occur from a direct and rapid application of force from below, or the end of the acromion. In order to produce so much laceration, not only of the muscles but of the capsular ligament, the head of the humerus must (one would think) have passed for some considerable distance from its natural position ; and how it could find room for this directly upwards, without splintering off the acromion in its passage, is a problem somewhat difficult of solution.

The facts, however, which most strongly support the view of the dislocation having primarily been forwards and upwards, are derived from a consideration of the state of the muscles around the joint.

The state of the muscles in the more common forms of dislocation has now been examined in many recent cases, and has been found, for the most part, to correspond so well with what might be expected from an *a priori* consideration of the course and attachment of these muscles, that, knowing the direction in which the bone has been displaced, we may, with tolerable certainty, name the muscles most likely to be found torn, or put violently on the stretch.

The converse of this cannot, however, so readily be inferred; that is, knowing the muscles torn across, we cannot in every case infer, from such facts alone, in what direction the head of the bone escaped. This difficulty arises from the circumstance that (owing probably to individual differences in the size and strength of these muscles, the precise direction of the displacing force, and the state of action of particular muscles at the moment of displacement) the greatest variety is found to exist both as to the number of muscles torn and as to the extent to which they are injured.

To take an example :—In a case described by Mr. Curling, [Sir Astley Cooper on Dislocations, last edition, p. 385,] of dislocation of the head of the humerus forwards and upwards, the supra-spinatus, infra-spinatus, and sub-scapularis muscles were all torn across their attachments; whilst in a case related by Mr. Key (in the same work,) and in another recorded by Sir Philip Crampton (*loc. cit.*) of the same kind of dislocation, none of the muscles were ruptured, although the supra-spinatus and infra-spinatus were put violently on the stretch.

Nor is this at all surprising, when we consider the great variety of circumstances under which such accidents may occur. In one instance the muscles may act so suddenly and powerfully, and the force may be applied so rapidly, that the parts tear before they can yield; whilst in another case, from the opposite conditions, the corresponding muscles, taken, as it were, by surprise, yield instead of tearing, or offer just sufficient resistance at the moment to cause the head of the bone to roll a little on one side, and pierce the capsule at an interval between the tendons.

Where muscles inserted into opposite sides of a displaced bone are both ruptured, the rupture must be brought about in two different modes; one set of muscles being pushed in front of the advancing bones, the other set being dragged after it; the one being made tense over the head of the bone displaced, the other being stretched over the cavity from which the bone is dislodged.

Of these, however, the latter appears to me by far the more likely to occur, inasmuch as the head of the bone, whilst pushing the muscle before it, and forcing it to describe a curve, tends at the same time to bring the two extremities of the muscles nearer together, and thus causes less actual tension than might at first be supposed.

If this be the case, we may infer that where rupture of fibres, or fracture of the bony attachment, is limited to one group of muscles, (the opposing group retaining their natural insertions and healthy appearance,) the head of the bone has probably taken a direction away from the muscles so injured, and towards those that have escaped injury.

To apply this to the cases under consideration. It is remarkable, that

in both instances the sub-scapular muscle escaped injury, although the supra- and infra-spinati were completely separated from their insertions. Under the supposition that the dislocation was directly upwards, it is difficult to explain why there should have been this great difference, unless, indeed, at the time of the accident, the arm had been strongly rotated outwards. Even then I am at a loss considering the relation of the parts to understand why the supra-spinatus should have received so much injury, when the teres minor escaped altogether.

If, however, we suppose the displacement to have occurred upwards and forwards, would not this difference in the amount of injury produced be more satisfactorily accounted for?

I am aware it may be said that this is only arguing on probabilities, but, unfortunately, the facts collected from recent cases are so meagre on this particular point, that it is the only mode we possess of approaching the question.

The positions I have endeavoured to maintain are—1st, That there is not sufficient evidence in the cases before us, to conclude that they were instances of the rare form of primary dislocation upwards; and, 2dly, That there are reasons for believing that they were originally displacements of the head of the humerus upwards and forwards.

*Lancet*, May 17, 1845.

**ART. 64.—A new method of Diagnosis in Cataract and Amaurosis.**

By Dr. MAGNE.

(*Gazette Médicale*, and *Medical Times*, Feb. 8, 1845.)

It was in the year 1836 that Professor Sanson first observed the circumstance, and in 1837, he announced it in his clinical lectures, that if a light was placed before the eye of a person afflicted with amaurosis, the pupil having been previously dilated, three images would be perceived; the first, anterior, the brightest, being erect; the second, central, somewhat paler, inverted; and the third, posterior, the palest of the three, like the first, erect. The first is formed by the cornea, the second by the anterior segment of the lens, and the third by its posterior segment. Opacity of the cornea destroys all three images; opacity of the anterior portion of the capsule, the centre and posterior ones; and opacity of the posterior portion of the capsule, the posterior alone. But certain precautions are necessary to be observed: 1st. The pupil must be dilated; this is to be attained by means of belladonna, so that the pupil may be double or treble its original size. If it be necessary to obtain dilatation immediately, atropine may be employed, in the proportion of gr. j. to a table-spoonful of water, dropped into the eye. This application is followed by pain, an injected state of the conjunctiva, and an increased flow of tears; but the first is not very intense, and the two last soon disappear. The patient must be requested to keep his eyes well shut; otherwise the solution will escape with the tears, and no effect will be produced. 2d. The eye must be examined in a dark room. These precautions taken, the three images will be seen, should cataract not exist; there are, however, two states in which they are perceived, notwithstanding this disease: (a) when the cataract is very slight, forming a species of haziness, through which the rays of light penetrate, though with difficulty; (b) when the opacity has commenced by the periphery, affecting only a very limited

penetrate as far as the union of the posterior third with the anterior two thirds. Sometimes the velum palati is raised, so as to close hermetically the orifice. In such cases, the finger must be kept motionless in the mouth, and in a very short time, the velum will be felt re-descending, and the operation can be terminated. Extraction of polypi is not without danger; the cribriform process of the ethmœides may be injured, and fatal meningitis be the result: it is, therefore, useful to prescribe a regimen more or less severe, foot-baths, rest, and inhaling by the nostrils the vapour of the decoctum altheæ officinalis; if a congested state of the parts exist, venesection must be had recourse to. Finally, to prevent a relapse, on the fourth or sixth day, when the inflammatory symptoms have subsided, the parts must, for a fortnight, be touched every second or third day, with a hair-pencil dipped in the followed mixture: *R. Decoct. vinos. rosæ gall.\**  $\frac{3}{4}$  j., sulph. zinci. 3 j. M. Should the patient be very excitable, the proportion of the sulphate must, at first, be weaker. The result of its application is considerable irritation, lachrymation, sneezing, sometimes to such an extent, that the patient, in spite of the fear of a relapse, refuses to permit its being applied a second time. Care must be taken not to approach too near the cribriform plate, and if inflammation supervenes, appropriate remedies must be prescribed.

## SECT. II. ON THE NATURE AND CAUSES OF SURGICAL DISEASES.

### ART. 66.—On Inverted Toe Nail. By Dr. ZEIS.†

The affection usually known as the inverted toe nail is one which, when we consider the frequency of its recurrence and the intense suffering to which it occasionally gives rise, is of no small importance. The operations generally proposed for its cure are of the most severe kind. Noret (*Archives générales de Méd.*) drives a spatula down to the root of the nail and tears off the inverted edge. Larrey (*Clinique Chirurgicale*) divides the nail with scissors, and forces back the diseased portion. Others destroy part or the whole nail with caustics. Thus Payau (*Revue Méd.*) Barbette, and Bordez burn it away with equal parts of potassa fusa and quicklime. Many other proceedings, some less barbarous than the preceding, have been followed by Petrequin (*Archives de Méd. Belge.*) Bonnet (*Bulletin de Thérapeut.*) Lechler, &c.

"It is not," remarks Dr. Zeis, "the painful character alone which renders such operations disgusting to me. My opposition to them is derived from the feeling that they are based upon erroneous principles."

[Dr. Zeis considers it all important in all cases to attend to the general health. His plan of local treatment is, whenever the nail is too short to allow it to grow to its proper length, taking care, however, that it shall not assume a downward direction, by inserting portions of lint behind it and

\* *Decoct. vinos. Rosæ Gall.*  $\frac{R$  Rosæ gall.  $\frac{3}{4}$  ij; vin rubr. lb. ij. Place the wine and rose-leaves in a covered vessel, heat the mixture to near the boiling point, withdraw it from the fire, and allow it to infuse for an hour; finally, filter with expression. Sometimes  $\frac{3}{4}$  iiss— $\frac{3}{4}$  iiss of alcohol may be added.

† *Drei Chirurgische Abhandlungen.* Von Dr. Zeis.

the soft parts.] "Even in severe cases," he observes, "I have seldom failed to secure the entire and permanent relief of the patient by rest, the frequent use of the foot-bath, and the removal of the fungous granulation by which the edge of the nail becomes covered."

The leading propositions which Dr. Zeis seeks to establish are these:—

1. That the so-called growing in of the nail is not in general the result of a too great breadth of the nail, but it caused entirely by inflammation and intumescence of the soft parts.
2. It is not, therefore, to the removal of any condition of the nail that the attention of the surgeon is to be directed, but to the removal of the inflammation and ulceration, and the diminution of intumescence caused by fungous growths.
3. The destruction of the whole or part of the nail is in no case required, and the operation from its severity should be considered unwarrantable.

**ART. 67.—On the Malformations and Congenital Diseases of the Organs of Sight.**

By W. R. WILDE, M.B.I.A. Surgeon to St. Mark's Ophthalmic Hospital.

(*Dublin Journal*, March, p. 43.)

[Our knowledge of the development of the human foetus, both in the normal and anormal conditions, has of late years been considerably advanced by the labours of Bischoff, Wagner, Burdach, &c., who have traced the product of conception from the earliest moment of its existence to the epoch of its independent and individual life. We are now made aware, by the researches of these eminent physiologists, that the various parts of the foetus are gradually superadded, and that it passes through certain separate phases of development, each of which is the type of the permanent and perfect formation of other grades of animal life. The human foetus exhibits the highest point of development to which the primary cell called into life by the act of conception can under the present order of things arrive, but it may under certain circumstances fail in accomplishing this perfectibility, and stop short, or, in the language of physiologists, be arrested in any one of the phases, through which it is destined to pass. The study of this part of the science of embryology is of the most interesting kind, and is now making rapid advance under the investigation of many able physiologists. Among the most interesting additions to our knowledge of the subject of congenital imperfection, must be mentioned, an essay by Mr. Wilde on the malformations to which the organization of the eye is liable, and which we shall proceed to condense. The author, after some general observations respecting the circumstances attached to foetal life, thus expresses himself:—]

"The eye does not become a perfect whole at one and the same instant, nor is its perfection as an optical instrument completed until the last month of intra-uterine existence. Did space permit, it would be instructive to sketch the growth and development of this organ from the researches of the most recent observers, but as this cannot be fully accomplished, we shall proceed to inquire into those vices of conformation, the results of arrest of development, in its growth, transparency, and valvular arrangement, as well as those diseases which, being present at birth, are regarded under the general head of congenital defects."



*Malformations and Congenital Diseases of the Ocular Appendages.*

1. *Epecanthus*. This disease consists in a superfluity of skin over the root of the nose, which falls outward in a crescentic fold so as to hide completely the inner canthus, and even the inner margin of the cornea in extreme cases. The disease was originally noticed by Schön (*Handbuch der Path.*) and is described by Von Ammon, (*Zeitschrift für die Ophthalmolog.*) Mr. Wilde has seen two well marked cases in this country; one a girl æt. 7, in whom there was the additional deformity of flat nasal bones, giving her a Kalmuc or Chinese appearance.

2. *Ptosis* is so commonly observed in new-born infants as the result of accident, disease, or congenital malformation, that there are few practitioners who have not witnessed it; it is not necessary therefore to describe its appearance. When it occurs as the result of developmental defect, absence or a rudimentary form of the levator palpebræ has usually been observed. There is, however, it must be remembered, another form of ptosis appearing at birth, which is caused by undue pressure upon the head during abstraction. The most remarkable cases of congenital ptosis is one recorded by Seiler, and figured by Von Ammon, in which the upper lid was so long as to overlap the margin of the lower.

3. *Ectropium* is rarely seen as a congenital defect. Two German writers, however, Schulte (*Gräfe und Walker's Jour.* Bd. 9.) and Loschge (*Isenflam's und Rosenmüller's Beiträge z. Zergliederungsk.* Bd. 1.) have recorded cases. The appearance is similar to that which occurs in after life.

4. *Entropium and Trichiasis* have been observed by the author, who believes that the disease may arise from inflammation occurring in utero.

5. *Anchylo-blepharon, or adhesion of the tarsal margins*, appears to be the natural condition of the fœtus of a certain period, and persists in the feline tribe till several days after birth. The younger Himly tells us that this union is maintained by a continuity of the palpebral conjunctiva: that this is also a natural state of the human fœtus at a certain period, is believed by Meckel and Von Ammon; an arrest of development, therefore, at this period, will readily account for the occurrence of anchylo-blepharon. It is still a matter of discussion whether the junction of the lids in the human fœtus, anterior to the fifth month, is the result of membranous union, or simple mucous adhesion.

6. *Phimosis palpebrarum* is a term which has been applied by Kimberger, Von Ammon, and others, to a natural defect of the eyelids, in which the palpebral orifice is evidently too small. Chelius of Heidelberg (*Handbuch der Augenheilkunde*) has recorded three well-marked instances of the affection.

7. *Coloboma palpebræ*, or cleft lid is mentioned by Bannister near a century ago. As in hare-lip, the cleft lid is generally confined to the upper. It has been found in conjunction with hare-lip, and fissure of the iris.

*Malformations of the Lachrymal Organs.* 1. *Absence of the lachrymal gland.* This gland which, according to the writer before mentioned in the *Encyclopédie Anatomique*, is first recognized in the first half of the 4th month, is occasionally wanting at birth. A case is recorded as early as 1721, by Botin, in which there was likewise deficiency of the globe of the eye.

2. *Fistula lachrymalis.* In Blazius' *Zeitschrift* for 1837, a remarkable

congenital case of this affection is mentioned by Dr. Behr of Bernberg. The case is considered by Mr. Wilde to be unique.

**Malformations of the Globe.** 1. *Microphthalmus* and *Megalophthalmus*. The former of these terms is applied by the continental writers to a peculiar condition of the eye, when there appears to be an arrest of development of the organ at some particular period of its growth, without either atrophy or disease, but when at birth, the eye, although it may appear perfect as an organ, does not bear its proper proportion to the rest of the body. Three varieties of the affection have been described, one where arrest took place when the iris was just forming; another which occurs at a more advanced period, when the iris is not perfected, and consequently gives rise to coloboma iridis, or cat's pupil. The third is when all the parts are natural, but there is frequently an irregular position of the pupil. Numerous cases of this defect are recorded by Schon, Fischer, Weller, and others. *Microphthalmus* sometimes also arises from disease occurring in utero, when one or both organs are diminished from atrophy; in these cases there is generally cataract, disease of the choroid, and immoveable iris, appearances, which sufficiently distinguish it from an arrest of development.

*Megalophthalmus* is usually a pathological appearance caused by hydrophthalmia, either existing alone, or coexisting with hydrocephalus, or other cerebral diseases.

2. *Anophthalmus*, or congenital deficiency of the organs of sight, has occurred in the experiences of several British surgeons. In 1831, Mr. Walker communicated to the *Lancet* the cases of two sisters, one five years of age, the other four months, in whom both eyes were completely wanting, the orbits being filled up with dense cellular tissue. A case in point has likewise been communicated to the author by Mr. Eslin of Bristol.

3. *Nystagmus*, or oscillation of the eye, is a constant symptom in those born blind. It is an attendant upon congenital amaurosis, but is more frequently seen in congenital cataract. The author has lately observed this symptom in a case of congenital fungus hæmatodes of both eyes. (p. 42.)

#### ART. 68.—*On the Pathology of Toothache.* By Dr. HEILDEN.

(*Medical Times*, March 21, 1845.)

Toothache may depend either upon congestion, inflammation, or a lesion of innervation. 1st. *Congestion*; this may have its seat either in the membrane exterior to the fang of the tooth, in that lining its central canal, or in the ganglion, which supplies the tooth with nerves. Congestion, when seated in the lining membrane of the fang, may be known by lancinating, throbbing pains, which are increased by any excitement of the system; these pains are variable in their character, sometimes lasting but for a few minutes, and again for as many hours, they are generally increased, towards evening, and when the patient is in bed. The tooth, whose lining membrane is affected, is sensible to the touch, or to pressure, and frequently conveys the sensation of being somewhat above the level of the surrounding teeth. The frequent application of cold water to the affected tooth is one of the best means of cure that can be adopted in this form of odontalgia. 2d. *Congestion in the lining membrane of the canal, and of the dental nerves.*—Toothache dependent upon these causes may be distinguished from the variety just described, by the tooth not being painful on pressure nor conveying the sensation of prominency over its fellows. It may also,

be distinguished by the effect which cold water produces upon it ; if the tooth be carious at the crown, cold water immediately gives relief, but if it be not so, the pain undergoes an exacerbation for some time, but under the use of the remedy it eventually disappears. Young, plethoric persons, and pregnant women, are those most subject to this form of toothache. In obstinate cases, besides the local application of cold water, it may be necessary to use the foot-bath, and administer purgatives. Where caries of the tooth exists along with this form of congestion, timely plugging must be had recourse to. All stimulants, such as the tinctures in common use for curing toothache, must be avoided here, as they only increase the mischief.

**Inflammation.**—This process when occurring in the teeth of a healthy individual, will produce the phenomena of healthy inflammation in any other part of the body ; in individuals affected with gout, rheumatism, or scrofula, it will present the specific character of these diseases. Inflammation of the internal lining membrane of the tooth-fang (periodontitis,) occurs much oftener in carious than in healthy teeth ; it is characterized by a dull aching, rather than actual pain, from which the patient fancies he obtains relief by pressing his teeth strongly together. This dull aching after some time is exchanged into an acute, *boring* pain, which extends to the neighbouring teeth ; at this stage, the affected tooth seems more elevated than its fellows ; and this sensation prevents perfect closure of the mouth, and to a great degree interferes with mastication. In some cases this local inflammation causes severe constitutional disturbance, heat and redness of the cheeks, severe headache, and general febrile irritation. In this state, if nothing be done to check the local inflammation, this acquires greater intensity. The acute boring pain is now changed into a dull aching attended with throbbing, if the gum about the affected tooth be examined, it will be found intensely inflamed, the tooth itself is *now* visibly longer than the surrounding ones, and loose ; pressure makes the patient feel as if it were about to start from its socket. All these are evidences of suppuration at the root of the tooth, and if it be now extracted, a drop of matter will be seen attached to its root. In cases of intense inflammation of the tooth-fang, the process of inflammation may not be terminated by the formation of matter ; inflammation proceeds outwardly to the gum, the alveolus is absorbed, and a portion of the matter formed at the base of the tooth is thus evacuated, when the opening in the gum closes for a short time, until the matter again accumulates. Thus a sort of fistula is formed which can only be healed by the extraction of the tooth. The mischief may not be confined to the root of the tooth alone—which becomes absorbed at its extreme point and roughened—but may also extend to the jaw-bone and render it carious. It sometimes happens that the cyst containing the pus at the root of the tooth, becomes changed into a mass of pappy consistence, which, comes away with the tooth on the latter being extracted. The treatment of this variety of odontalgia must be strictly antiphlogistic. Should the local application of cold fail in completely removing all the symptoms, leeches must be at once and freely applied to the gums. Where suppuration seems inevitable, a gently diaphoretic treatment with fomentations of warm water, or warm decoction of poppies, or marshmallow, or a solution of extract of henbane, in the proportion of five or ten grains to four ounces of warm water, will be found to assist materially the maturation of the abscess ; as soon as the pus has been evacuated, the diseased tooth must be extracted. It very often happens that a great number of the teeth are loosened, without any

mechanical cause; this may depend either upon a sub-inflammatory affection of the lining membrane of the alveolar process, or upon that form of cynanche, denominated "Parotidea." In the latter instance time alone will effect a cure; the former requires for its cure repeated application of leeches over the affected portions of the alveolar process.

Wiener's Zeitschrift.

### SECT. III. ON THE TREATMENT OF SURGICAL DISEASES.

#### ART. 69.—*Treatment of Fistula in Ano by Ligature.* By Mr. LUKK.

(*Lancet*, Feb. 22, 1845.)

The advantages of this method over that by the knife are: 1st. The shorter period which usually elapses before the final cure. 2d. The less pain which is felt during treatment. 3d. The absence of the dread which the knife generally inspires, and the consequent inducement which it offers to the patient to submit to effective curative treatment; and, lastly the avoidance of all hemorrhage. The treatment is to be conducted in the following manner: An eyed probe, armed with dentist's silk, is introduced through the fistula into the rectum, from whence the silk is withdrawn through the anus, by means of a spring-catch introduced into the rectum upon the finger of the operator. The parts to be divided are then inclosed between the two extremities of the ligature, to which a small fistula-tourniquet is subsequently attached, by passing them through holes provided for the purpose. The requisite amount of tension is maintained by a screw. Care must be taken that the ligature be not so tight as to cause more than slight uneasiness. After the lapse of a few days, ulceration of the inclosed part commences, and the tourniquet becomes loosened, indicating the necessity of the ligature being made tighter.

[Nine cases are appended, in which the proceeding was attended with perfect success.]

ART. 70.—*Description of a New Instrument for Ligature of Fistula Ano*, by Dr. NELKEN.—This instrument is composed: 1st, of a rod, about  $11\frac{1}{2}$  inches in length, the upper third of which is divided into four equal parts, united to each other by hinges, so arranged that they can be closed only in one direction, the last being furnished with a knot, and a hole to pass the ligature; and 2d, of a tube through which the former is passed when threaded. The finger being placed in the rectum, the apparatus thus prepared is passed upwards into the fistula, until the extremity reaches the finger, the tube is then withdrawn to an extent equal to one of the four divisions of the rod; the whole is next pushed forwards, the finger in the rectum causing the rod to bend downwards as it penetrates into the intestine; the same manœuvre is repeated until the ligature appears at the anus, when the surgeon seizes it, and terminates the operation.

*Medical Times*, Feb. 8th.

**ART. 71.—Erectile Tumour of the Eyelid treated by Inoculation with Croton Oil.**

By ALEX. URE, Surgeon to the Westminster General Dispensary.

(*Medical Gazette*, March 21, 1845.)

Mary D., æt. 3½ months, admitted Dec. 30, 1844. At the inner angle of the right upper eyelid, is an erectile tumour, as large as a currant. It appeared as a scratch at birth, and has progressively reached its present size, growing very rapidly during the last month. There is a reddened villous condition of the palpebral conjunctiva subjacent to the tumour. The child is in other respects healthy. I first tried the plan of subcutaneous puncture, employing for this purpose a common iris knife. A repetition of this proceeding, after a few weeks, appeared to have no effect in reducing its volume. Towards the middle of February, I had recourse to inoculation with croton oil. I made several minute punctures with a cataract needle smeared with the oil, over the surface of the nævus. This gave rise to redness and swelling which lasted a few hours, and, subsequently, to small points of suppuration. This tiny operation was repeated at an interval of a week. The result has been a rapid diminution, with withering of the tumour; and now scarcely a vestige remains, with the exception of a slightly puckered speck at the corner of the eyelid.

Mr. Ure remarks that the employment of the knife is inadmissible in cases like the present, not only on account of the hemorrhage, but from the liability to eversion, as a consequence of cicatrization. Seton, escharotics, vaccination, are likewise contra-indicated from the risk of violent irritation or sloughing. The plan of treatment adopted in this case was first proposed by M. Lafargue, and promises, if the present example may be taken as a criterion of its operation, to be one of considerable value and efficacy. Mr. Ure cautions the surgeon not to make more than five or six punctures at one time.]

[Upon the same subject we find the following remarks in a recent publication by Dr. Marshall Hall.\* After alluding to the various proceedings which are generally adopted by surgeons, he proposes a method, which, though slow in its operation, appears to have been successful in several cases. Dr. Marshall Hall describes his proposed plan in the following words:—

“The mode of cure to which I have alluded consists in passing a needle, of moderate size and with cutting edges, through the nævus, so frequently as to induce adhesive inflammation, with the deposit of lymph, and so as to obliterate and consolidate the vessels of which it is composed, yet so slightly as to incur no risk of inducing sloughing. The needle must be passed in several directions from one point in the circumference of the nævus to several points more or less opposite. The operation must be repeated at distinct intervals of two or more months, according to the state of the case and the progress of the cure.” (p. 223.)

**ART. 72.—The Treatment of Fractures by Larrey's Immovable Apparatus.**

The experience of campaigns in different climates has clearly demonstrated the great advantage of a regulated temperature in the healing of

\* Observations in Medicine, London, 1845.

wounds, especially when combined with certain provisions for maintaining a motionless condition of this part. The contrivance called by the above name was invented by Baron Larrey, under the pressure of the emergencies of the Russian campaign.

The following are his instructions for its arrangement:—"If a fracture of a limb be complicated, with an external wound, we should simplify it as much as possible, by freely incising its edges, and extracting all foreign bodies. When this has been done, we should close the wound by a piece of linen, on which some balsamic substance, as styrax ointment, has been spread. Pledgets of lint are then to be placed over the dressing, so as to fill up any anfractuositities that correspond to the wound; as also some square compresses, dipped in a wash made of white of egg, and camphorated spirit, or vinegar. These compresses are to be carefully adjusted, while an assistant maintains the broken bones in correct apposition. The compresses are kept in situ by an eighteen-tailed bandage, which, when properly applied, keeps everything in its right place. The foot and ankle, joint should previously be enveloped in long compresses, wetted with the same fluid. A pad having been placed under the tendo-achillis, to make all level and even, the surgeon is then to take two cylindrical rolls of new straw, and wrapping them up in the opposite ends of a towel or sheet, laid under the injured limb, he is to apply them to each side of the leg, having previously interposed two or three flat cushions of chaff, to prevent injurious pressure. The whole is then tied together by tapes. As a substitute for the foot-board, Larrey uses a folded sheet, placed like a stirrup under the sole, and tightly fixed on each side of the leg to the straw rolls."

This apparatus is said by its inventor to be equally serviceable in fractures of the body or neck of the femur.

*Baron Larrey's Med. Campaigns, Med. Chirur. Jour, Jan. 1845.*

**ART. 73.—Ununited Fracture treated by Acupuncture.**—A case of ununited fracture thus treated, is recorded in the *Giornale per servire al progressi*. A man of good constitution, æt. 26, met with a simple fracture of both bones of the forearm. Five weeks after the accident no union had occurred, and the apparatus was again applied, and the limb kept in a state of perfect rest during four weeks longer. At the end of this time, finding the fragments still ununited, M. Wiesel determined upon the employment of acupuncture, which he did in the following manner:—"Between the fragments of the ulna he introduced two needles, long enough to pass completely through the false joint, and allowed these to remain in place during six days, by which time they had produced great tumefaction of the part, and caused much pain. Fifteen days after this, a similar operation was done upon the radius, which, after a few days was followed by acute pain and slight suppuration. After the application of the needles the arm was carefully supported in splints, and at the end of six weeks consolidation was found to be complete.

*Medical Times, Jan. 11, 1845.*

**ART. 74.—Treatment of the Sigmoid Contortion of the Vertebral Column.**

(*Brit. and For. Medical Review, April, 1845.*)

Dr. Zink, of the Orthopedic Institution at Vienna, appears to have bestowed much attention to that one form of spinal contortion which has

been termed the sigmoid flexure of the column. It generally commences from the fifth to the eighth year of childhood, between the third and fifth dorsal vertebræ, and the deviation is almost invariably towards the right shoulder-blade.

On careful examination at this period, we discover that the right shoulder exhibits an excess of nutrition over the left, and this is apparent even in the bones, and especially in the right shoulder-blade. In consequence of this, such children exhibit a remarkable tendency, in spite of all admonitions to the contrary, to lean towards the weaker side, and this even during sleep, while on every occasion requiring muscular exertion they prefer the stronger hand.

"From repeated observations," says Dr. Zink, "I am convinced that the greater part of the mischief here detailed is effected during sleep, and consequently is an operation during one third of the patient's daily existence. The head then leans down towards the left side, and the lung on that side is compressed, one lung only (the right) performs its full office, and the muscles of respiration on that side are in a state of activity, greatly exceeding that of the left. . . . I have also ascertained that the convexity of the deviation of the spine accords exactly with the insertion of those muscles which are most active in the process of respiration. This deviation from the perpendicular, so high up in the spinal column, is often overlooked, and the inferior and secondary contortion to the left side in the lumbar vertebræ is often regarded as the primary affection."

This form of scoliosis occurs chiefly among the children of the wealthy, and is much more frequent among females than males. It is curable as long as the vertebræ can be brought back to their natural position. Dr. Zink lays much stress upon the necessity of attending to the position of the body during sleep, and he believes that many attempts to cure are unsuccessful from the injurious posture being resumed during the period of repose. The watching of the patients during sleep, as may well be imagined, has been the most tedious and costly portion of the cure. During the day, the ordinary gymnastic exercises were employed, taking care that the weaker side especially should be kept in constant action. Dr. Zink believes that he has obtained much benefit also from frequent singing, which dilates the whole chest equally.

**ART. 75.—On Extension in the Reduction of Dislocations.**

By H. HANCOCK, Esq., Surgeon to the Charing Cross Hospital.

(*Provincial Medical Journal*, February 19, 1845.)

With respect to extension, the question at issue is, as to the part to which the power is to be applied. All the older writers, and most surgeons in the country, have preferred its application to the bone luxated: whilst others, as well as the continental surgeons, are strongly in favour of the extension being made from a more remote situation, i. e., from the wrist for the shoulder, and from the ankle for the hip. Each method is supported by valid arguments, and in like manner each is liable to objections adduced against it.

Among those who favour the former method, (application of force to the bone luxated,) we may enumerate Sir Astley Cooper, Pott, Hey, Lawrence,

Guthrie, Liston, Paré, Petit, Duverney, Callisen, Bromfield, Sedillot, Allan, Latta, and almost all the English surgeons.

Mr. Pott observes, "that when the extension is applied as far as possible from the luxated bone, that part of the extending power is lost on the joint, intervening between the dislocation and the part at which extension is made, and that the force necessary to be exerted in some instances would have a bad effect on the intervening joint."

Sir Astley Cooper states, "that as far as he has had an opportunity of observing, it is generally best to apply the extension to the bone which is dislocated; but that dislocations of the shoulder are exceptions, in which he mostly prefers to reduce the head of the bone by placing the heel in the axilla, and drawing the arm at the wrist in a line with the side of the body." Nevertheless, in the figures delineated in that gentleman's quarto work, the extension is applied above the elbow, even where the surgeon's heel is represented in the axilla; and moreover, where he describes this method, he says, "I have in many instances extended from the wrist by binding a handkerchief just above the hand, but more force is required in this, although it has the advantage of the bandage being less liable to slip."

Allan remarks, "that by adopting the practice of Desault and the French surgeons, we are in great danger of injuring the elbow, or wrist-joint, or both; besides, by extending the forearm, we put the long head of the biceps on the stretch, which will not only produce great pain, but impede reduction."

Mr. Syme, of Edinburgh, says, "that the force may be applied, so as to act either directly on the bone itself, or on a part of the limb separated from it by one or more articulations." It has been objected to the former mode, that it causes compression of the muscles opposed to reduction; and to the latter, that by keeping the limb straight, it is still more adverse to their yielding. It does not appear, however, that any practical inconvenience is experienced in either of these ways. The former method is, on the whole, more convenient in most cases.

Petit, Duverney, and others, with Pott, affirm, "that in dislocations in general, the extension and counter-extension must be made upon those very bones that are disjoined, and not upon those next to them; as all the force which is applied to the bone below must necessarily be lost in the articulation which is not luxated, and of little or no service to that which is. This is owing to the yielding nature of the joint."

M. Sedillot, also, after describing his apparatus for reducing dislocations, adds, "the projection of the condyles renders extension much more easy at the elbow than at the wrist, where we always press on the styloid process of the radius and ulna, and moreover cause great pain. These motives, joined to that of the traction, being more direct, led me to adopt it, in spite of the imaginary inconvenience of compressing some of the fibres of the biceps and triceps muscles."

On the other hand, some of the best surgeons in France, among whom we number Fabré, D'Apony, Desault, Boyer, Richerand, Leveillé, Malgaigne, and Velpeau; White, of Manchester; and Crampton, of Dublin; advise the extending force not to be applied on the luxated bone, but on that with which it is articulated, and as far as possible from it. They affirm that this plan had the advantage of not compressing the muscles that surround the dislocated bone, nor exciting them to spasmodic contrac-



tions, which would resist reduction, and, moreover, that the extending force is much more considerable than in the other mode, since, by using a long lever, we obtain a greater degree of power.

This method was not so generally adopted, until MM. Fabré and D'Apony pointed out its apparent advantages, and rendered its employment more systematic. Ambrose Paré, who was opposed to it, writes that it was familiar to the chimney-sweeps of his day; but this by no means depreciates the value of the method, since some of our most valuable and successful measures are those derived from the ignorant.

The muscles which they by this means avoid pressing or exciting, are those which proceed from the shoulder to the forearm, or from the pelvis to the leg.

Boyer asserts that surgeons failed, from applying extension and counter-extension directly on the bones displaced; and hence the numerous inventions, which all fell into disuse after Fabré and D'Apony demonstrated the utility of applying these forces as far as possible from the seat of luxation.

Mr. Crampton says (in regard to dislocations of the shoulder,) in Dublin as in Paris, and in Paris as in Germany, generally, we apply our extending power to the forearm, in preference to the arm. The application is far less painful, and the surgeon has more power in directing the motions of the limb.

The arguments hitherto advanced against the application of the extending force on the bone luxated, therefore, are these:—The non-compression of the muscles which surround the bone, rendering the extension more considerable, diminishing pain, and increasing the length of the lever.

In its favour: that it is more convenient, prevents the extending force being lost in the intermediate joint by the yielding of the ligaments, admits of the biceps being relaxed, and causes less pain.

#### ART. 76.—*On the Treatment of Cleft Palate.* By Mr. FERGUSSON.

(*Reported in Medical Times.*)

In a paper read before the Royal Medico-Chirurgical Society the author commences by making some general remarks on the operations for cleft palate performed in this country and abroad. He then proceeds to give a detailed account of a dissection he had an opportunity of making, of the muscles which operate upon the soft palate, in an individual who had both the velum and a portion of the hard palate cleft. This description is followed by an examination of the opinions of different eminent physiologists, concerning the motions of the velum palati and its arches during the acts of deglutition, and by the author stating his own views as to the actions of the various muscles when the palate is cleft. This part of the subject he further illustrates by describing four different states in which the flaps on each side may be seen upon looking into the mouth of a person who has a cleft palate, and irritating them in different ways. By pursuing this course of anatomical and physiological inquiry, he arrives at the following conclusions:—1st, That the flaps are slightly drawn upwards and to the sides, when the levator palati contracts; 2d, that when the levator palati and palato-pharyngeus act strongly and together, the flaps are so forcibly drawn from the mesial gap, that they can scarcely be

distinguished from the sides of the pharynx ; 3d, that the flaps are forced together, and the edges come into contact, when the superior constrictor muscle contracts during the act of deglutition ; 4th, that the circumflexus palati possesses but a feeble power over the flaps ; lastly, the fibres of the palato-glossus were very imperfectly developed in the specimen in his possession. The chief object of his paper is to communicate a novel plan of operating in staphyloraphy, founded on the above investigations, and which he has put in practice with most satisfactory results in two cases during the last twelve months. The principle of his new proposal is to divide those muscles of the palate which have the effect of drawing the flaps from each other, and widening the gap between them when they contract, so that the stretched velum may be in a state of repose, and the joined edge may not be pulled asunder by any convulsive action of the parts during the process of union. In other words, he advises, as an accessory to the operation of staphyloraphy, the division of the levator palati and palato-pharyngeus muscles ; and, if requisite, the palato-glossus. In bringing forward this plan, he reviews the different modes of operating which have been pursued by numerous distinguished surgeons who have written on the subject ; and he concludes by entering several minute details regarding the steps into his own operation, and by describing the particular forms of instruments which he has found best adapted for his proceedings.

ART. 77.—*Observations on Aneurism.*

By J. LUKE, Esq., Surgeon to the London Hospital.

(*Medical Gazette*, May 10, 1845.)

[In the paper from which the following remarks are extracted, the author relates an example of the spontaneous cure of what he terms tubular aneurism. The patient was a muscular man, æt. 31. The aneurism was situated upon the femoral artery. The only application made to the tumour was that of adhesive plaster, and he was left with the injunction to remain in bed in order to determine whether any increase took place in its dimensions. Upon removing the plaster at the end of a week, it was found that a great change had taken place in the tumour ; in fact, pulsation had entirely ceased, not only in the tumour itself, but in all the arterial branches below it. The unexpected issue of the case gave rise to the observations which we here append :]—

“ In the brief remarks which I intend to make upon the above very interesting case, I would wish first to call attention to the unsatisfactory use of terms employed to distinguish the different kinds of aneurismal diseases from each other. It may be generally asserted that any change of terms in common use is decidedly objectionable, so long as they convey definite ideas ; but when they fail to do this, a change becomes desirable. It is for this reason that the terms *true* and *false*, and *diffused*, as applied to aneurisms, are unsatisfactory ; because they fail to convey a meaning uniformly of the same import to all, and require some circumlocution for their explanation. Thus, some surgeons employ the term ‘true’ to designate all kinds of aneurism in which a sac is formed as a result of disease ; while others restrict it to dilatation of the tunics only. Again, others exclude the uniform dilatation of the tunics altogether, and mean merely by the term a partial dilatation of one side of an artery. So also the term

'false' is used to designate all aneurisms without previous dilatation of the tunics, whether they are the result of ulceration, rupture, or wound; while some apply the term 'diffused' to aneurisms arising from the latter cause. However much I may be generally indisposed to change of terms, I think these may with advantage be allowed to become obsolete, especially as others may readily be found which will designate the particular forms of disease by their own import.

"The different kinds of aneurism may conveniently be thus designated. 1st. To the most common kind, characterized by the existence of a sac, the term 'saccated' may with propriety be applied as simply indicative of that fact, without entering into any speculations as to the means by which the sac is produced. If we wish to make distinctions of the saccated form, we might use the term 'traumatic' for those forms of it which are the result of wound. 2dly. There is a form of aneurism characterized by a pretty nearly uniform dilatation of the tube of the artery, of which the case above related forms an example. This, by some surgeons, has been considered not to be aneurism at all; while by others it has been regarded as the true form of that disease. From the circumstance of the tube of the artery undergoing a pretty uniform dilatation, I think that the term 'tubular' would not be inappropriate, and would express adequately the kind of disease meant to be designated. 3dly and 4thly. The terms 'dissecting aneurism' and 'varicose aneurism,' are sufficiently expressive of the forms of disease to which they are at present applied, and need no further observation. But, 5thly, the term 'aneurism by anastomosis,' as it involves an hypothesis, may be advantageously changed for 'capillary aneurism,' as merely conveying an idea that the minute or capillary vessels are the structures affected. Thus we have—

- "1. Saccated aneurism, including traumatic;
- "2. Tubular aneurism;
- "3. Dissecting aneurism;
- "4. Varicose aneurism;
- "5. Capillary aneurism; under which terms may be embraced every known variety.

"With regard to the case above related, the first circumstance which calls for comment is the external form of the tumour. In this respect it is generally by no means so globular as the saccated disease, but is usually oval, or rather fusiform, with the long axis lying in the course of the arterial trunk. The external form results from the manner in which the disease is developed, which in cases similar to the above is by a limited but uniform expansion of the arterial tunics with a corresponding enlargement of the area of the vessel at its dilated part. The extent of the vessel so dilated varies, but above and below the diseased part the artery retains its healthy dimensions. From this state of things arise some important considerations.

"It will be recollected, that in saccated aneurism the blood is thrown out of the course of circulation into the sac, where the influence of the current is so far diminished in certain cases, as to allow the contents to become partially quiescent, and thereby disposed to coagulate in the tubular form, however, the whole force of the current passes through the centre of the dilated parts, and must obviously tend to counteract any disposition to coagulation of the blood contained therein. It is to this cause that the

absence of solid contents has been usually attributed, as well as the greater softness of the tumour, and its capability of being emptied by pressure.

"Another circumstance worthy of observation is the slow rate of increase in tumours of this description. This is what might be expected when the resistance of the arterial tunics, and the force of the blood current are nearly on a par. But it might be supposed that as the tunics become thinner by expansion, their resistance would be diminished, and that they consequently would yield more rapidly as the tumour became larger. I believe the reverse to be the fact, arising from the force of the circulation upon the interior of the expanded part being diminished in a greater ratio than the resistance of the vessel, from the well-known causes which influence the course of currents passing from small tubes into those of larger dimensions. It is not difficult to imagine that in the progress of tubular aneurism a status may at last be arrived at, in which no further increase of the tumour would take place. Nor am I satisfied that in the above cases such a status had not been attained; for it was remarked by the patient that he had not observed any increase in the swelling for the last twelve months.

"The last and most important consideration is that relating to the means by which the cure in the above case was effected. On this subject we must be content with mere surmise. It is the common practice in such cases, and in those which take place in the saccated form, to attribute them to the occurrence of coagulation of blood within the artery or within the sac, which prevents the ingress of fresh blood, and thus stops the progress of the disease. I am disposed to think that such explanation is unsatisfactory, both in reference to the case related, and to aneurisms in general when they undergo spontaneous cure.

"The question is one of some moment, and perhaps may merit a few observations, particularly as it has a practical bearing. It is well known that in examining the sac of an aneurism, it is not unusual to find both fluid and solid contents, the first being blood, the second supposed to be blood in a coagulated state, but changed in character. An examination of the latter, as pointed out by Mr. Wardrop, in 'the Cyclopædia of Surgery,' shows that it consists of two portions, one coloured, the other nearly colourless. It is to the latter that I wish to direct attention, because it is on this that the curative process mainly depends. This portion adheres to the interior of the sac; but the adhesions are easily separable, so that it is sometimes found more or less detached. It consists of concentric layers, which are generally supposed to be deposited in succession. Mr. Wardrop, however, has adduced some reasons for supposing that these layers are the result, not of coagulation, but of an action taking place in the parietes of the sac. The reasons upon which he bases his opinion, are the 'great difference in the anatomical characters of a common clot of blood, and a fibrinous concretion,' the 'concreted fibrine having its anterior surface smooth and polished,' and lastly, the 'vascular connexion,' which he believes to exist between the concretion and the sac. The additional reasons which have convinced me that the common explanation of these concretions is incorrect, are derived from the examination of the fibrinous layers themselves, and the occasional interposition of coloured coagulum between them. It is not in every case that these coloured interpositions are found; but when found, these relations to the colourless

laminae are most important to, if not conclusive evidences for, the elucidation of the subject.

"If we adopt the common supposition that the whole solid contents of a sac are mere deposits from or coagulations of the blood, the explanation of the intermixture of coloured and colourless layers would be impossible. Under a real similarity in the process of formation, it seems probable that all the layers would be of one nature, not as is seen, some coloured, and others without colour. I think, therefore, that we must discard the opinion that the solid contents of an aneurism are the result of coagulation only. All difficulty, however, vanishes if we presume two separate actions. There can be little doubt that the coloured contents are coagula of blood, as they possess characters sufficiently recognizable. It is in looking to the position which these occupy in respect of the uncoloured or fibrinous concretions by which they are surrounded, that we are led to a satisfactory explanation of the mode of production of the latter. When we look at these clots, we find them either entirely surrounded by colourless fibrinous concretion, and excluded thereby from the fluid blood passing through the sac, or lying between the fibrinous concretion and the sac itself, in which latter situation they may or may not be excluded from contact with the fluid blood. When in the former of these two portions we cannot account for their insulated situation, unless by supposing the clot to have been formed upon the surface of the fibrinous mass, and to have become subsequently inclosed by new deposits of fibrine. But in the latter situation blood may be insinuated between the fibrinous concretion and the sac, in which case it will there coagulate and retain its characteristics.

"Having determined the points, we have next to discern on which surface of the fibrinous concretion these minute clots are really formed. If it be on the interior, or that surface which is in contact with the circulating blood of the sac, it is then no doubt derived from that blood; and the fibrinous concretions, by which it eventually becomes inclosed, are equally derived from the same source. On the contrary, if it be on the exterior, or the surface in contact with the sac, the fibrinous concretions which subsequently inclose it are, with equal certainty, derived from the sac; since by the formation of new adhesions after the clot has formed, the circulating blood becomes excluded, and no other source remains than the sac, from which any secretion of new matter can be derived.

"I am disinclined to the former supposition, from my belief that had the clot been so formed, the subsequent deposits by which it became inclosed would be of the same character and colour as the clot itself; and a wholly different appearance from that which we actually find would result therefrom. On the other hand, I adopt the latter supposition, not only as more in accordance with our general ideas of the reparative process, but also, and more particularly, from the observations I have had an opportunity of making upon the aneurismal contents. Thus a small-coloured clot had formed between the sore of an aneurism and the fibrinous concretions contained within it, arising, I believe, from the passage of the blood into a space left by a slight separation of the two from each other. The further ingress of blood had been prevented by new adhesions, and the process of inclosure had commenced by the deposit of a thin layer of fibrinous matter upon its exterior surface, which matter adhered to the sac, and had no doubt been formed subsequently to the coloured clot. A similar inclosure had occurred to another clot in the same aneurism, but

which, by the deposit of a greater number of fibrinous layers, had become more deeply buried within the mass, and consequently more central with respect to the aneurismal tumour.

"Taking then the order of sequence of the deposits to be such as I have stated, it follows that, the blood not having access to the external fibrinous layers, by reason of their adhesion to the sac, any increase which accrued to them could not have been derived from the blood, but must have necessarily proceeded from the sac itself, with which alone they were immediately connected. Granting this mode of formation of the exterior layer, a strongly presumptive proof is established, that the whole of the fibrinous layers were formed in the same manner, each pushing its predecessor forward upon the cavity of the sac, and being in its turn pushed forward by its successor, and inclosing a portion of coloured coagulum which has been fortuitously congealed upon its surface."

"The action by which the vessels of the sac deposit the fibrinous layers is probably of the plastic kind, and bears a certain analogy to the adhesive processes in other parts. Such being the probable means by which nature attempts a cure in these cases, we are admonished by the knowledge of them so to conduct our treatment, as at least not to counteract her efforts. We may thus assign a reasonable ground for objecting to a practice which experience has already shown to be injurious; and can view the abstraction of blood not as a means of promoting coagulation, but of diminishing merely the force of the circulation, and its consequent disturbing influence upon the sanitary plastic actions of the vessels of the sac. We therefore learn to avoid the enormous abstractions of blood, formerly, and even sometimes at present, so injuriously used, from a conviction that although they control the disturbing influence of too powerful a circulation, they also, to the same or greater extent, diminish that separative action of the vessels of the sac from which alone any permanent benefit can be reasonably expected; neither shall we have the same dread as formerly, of the slight inflammations which occasionally arise in the sac, since by them the curative action is likely to be promoted. Thus while we learn to direct our endeavours to diminish the disturbing influence of the blood current, we at the same time learn to avoid weakening the powers of the system by the use of means which induce extreme inanition.

**ART. 78.—Observations upon the Employment of Compression in Aneurism,**  
By O'B. BELLINGHAM, M.D., &c., &c.

(*Dublin Journal*, May 1845.)

"The subject of aneurism, since the time of Hunter, has always been one of extreme interest to surgeons, as is manifested by the numerous attempts which have been made to modify, or to simplify, the Hunterian operation. Thus, to assist union by the first intention after the operation, the two ends of the ligature were formerly sometimes cut off; or the ligature, after having been applied for a certain length of time, was removed, and the lips of the wound then brought together; or the ligature itself was discarded, and a *presse artère* applied instead of the denuded artery, and retained for a longer or shorter period according to circumstances. But as these different proceedings were occasionally followed by unfortunate results, they came ultimately to be in a great measure discontinued, and

surgeons were content to follow the Hunterian operation, adopting only such improvements as time had sanctioned. Nevertheless, the operation of placing a ligature upon a large artery was always one of considerable anxiety to the surgeon, seeing that even the most skilfully performed operations were now and then followed by secondary hemorrhage, by phlebitis, or by gangrene; any treatment consequently which promised to do away with those risks, was a great step in advance.

"When I first brought the subject of compression in aneurism before the Surgical Society of Ireland, only three cases had occurred in which this proceeding had been employed: that number has now been increased to twelve.

*Cases of Popliteal and Femoral Aneurism cured by Compression between November, 1842, and February, 1845.*

1. Dr. Hutton.	Richmond Hospital, Dublin.	Popliteal aneurism.
2. Dr. Cusack.	Stevens's Hospital, Dublin.	Popliteal aneurism.
3. Dr. Bellingham.	St. Vincent's Hospital, Dublin.	Popliteal aneurism.
4. Mr. Liston.	University College Hospital.	Femoral aneurism.
5. Dr. Harrison.	Jervis-street Hospital, Dublin.	Popliteal aneurism.
6. Mr. Liston.	University College Hospital.	Femoral aneurism.
7. Dr. Bellingham.	St. Vincent's Hospital, Dublin.	Femoral aneurism.
8. Dr. Kirby.	Jervis-street Hospital, Dublin.	Popliteal aneurism.
9. Dr. Allen.	Royal Naval Hospital, Haslar.	Popliteal aneurism.
10. Mr. Greatrex.	Assist. Surg. Coldstream Guards.	Popliteal aneurism.
11. Dr. Cusack.	Private patient, Dublin.	Popliteal aneurism.
12. Dr. Porter.	Meath Hospital, Dublin.	Popliteal aneurism.

"Eight of these twelve cases were treated in Dublin; and in all the cure has been permanent. The aneurismal tumour in a few instances was of very large size, and in a few the operation by ligature would very probably have failed, owing to the diseased condition of the vessel, or some other cause.

"It will be observed, from the histories of the cases which have been published, that the femoral artery could be traced after the cure to near the sac of the aneurism; proving that the artery is never obliterated at the point compressed. Upon a former occasion\* I endeavoured to show that such an amount of pressure as would obliterate the artery is never necessary; and a cure would be more certainly and more quickly brought about, by allowing a feeble current to pass through the sac of the aneurism, than by completely checking the circulation in the vessel.

"The principal improvement which has taken place in the treatment of aneurism by compression, consists in the mode of applying the pressure; that is, instead of employing a single instrument, we employ two or three if necessary; these are placed upon the artery leading to the aneurismal sac, and when the pressure of one becomes painful, it is relaxed, the other having been previously tightened, and by thus alternating the pressure, we can keep up continued compression for any length of time. By this means the principal obstacle in the way of the employment of pressure has been removed; the patient can apply it with comparatively little inconvenience to himself; time will not be lost owing to the parts

\* Dublin Journal, vol. xxiii. p. 465.

becoming painful or excoriated from the pressure of the pad of the instrument; and as the pressure need not be interrupted for any length of time, the duration of the treatment will be necessarily considerably abridged.

"Some of the success of the improved method of applying pressure must, however, be referred to the improvement of the instrument used. That which I employed, is a modification of a carpenter's clamp, which was invented by a patent under Dr. Harrison's care for popliteal aneurism, whom I had the opportunity of seeing several times, both while under treatment and after a cure had been effected. It consists of an arc of steel covered with leather, at one extremity of which is an oblong padded splint, the other extremity terminates in a nut, containing a quick screw, to which a pad, similar to that of a tourniquet, is attached. The principle of this instrument is exceedingly simple, so much so that the patient can regulate its application himself, and it can be made of every size, so as to compress any vessel within the reach of compression. It appears to be a much superior instrument to that which was employed in the cases treated in the London hospitals, the application of which cannot be maintained for any length of time, without occasioning severe pain.

#### "ADVANTAGES OF COMPRESSION OVER THE LIGATURE.

"I propose now to enumerate some of the advantages which compression appears to possess over the ligature in the treatment of external aneurism.

"In the first place the employment of pressure is not attended by the slightest risk to the patient. If this applied to the operation by ligature (leaving out of consideration the horror many patients have of the surgeon's knife,) it might not constitute a very stringent argument with some, for deviating from what are considered established usages; but when the facts are so much the reverse, when even the most carefully performed operation for aneurism of a large artery is liable to be followed by fatal results, and when this is due, not to the increase of the disease, but to the operation performed for its relief, a mode of treatment which is exempt from all danger has obvious advantages on the score of humanity; and when this mode of treatment has proved successful in every case in which it has been carried out since its introduction, it must constitute a powerful argument in its favour over the ligature.

"Again, pressure is applicable to certain cases of aneurism to which the ligature is not, as well as to some cases in which the operation by ligature would be likely to be followed by unfavourable results. For instance, when an aneurism has attained a very large size, the long-continued pressure of the tumour must act injuriously upon the collateral circulation, compressing the veins, perhaps obliterating the arteries in its vicinity, and causing œdema of the limb below. If a ligature under such circumstances is applied, the extremity is very likely to be attacked by gangrene. This cannot happen in the treatment of aneurism by compression, which acts slowly and gradually, and can be interrupted at any time. Indeed, it appears to me that pressure would probably succeed more quickly in curing a large than a small aneurism; inasmuch as the lining of the sac of a large aneurismal tumor is generally rougher and more irregular than that of a small one; it will therefore more readily entangle the fibrine of the



blood which is allowed to flow through it: moreover, in several of the examples of aneurism cured by compression, which have been published, the tumour was of a large size.

"Again, when an aneurism has attained a large size, if its contents are principally fluid, and its parietes are much thinned, inflammation and supuration of the sac very commonly follow the application of the ligature, which may bring the patient's life into danger, and, at best, must render the recovery very tedious. This has never occurred yet after the use of compression, and such a result is evidently much less likely to follow it. Indeed, Dr. Cusack's last case of popliteal aneurism cured by compression, is an example in point; the tumor was of large size, the circumference of the limb at its seat being five and a half inches greater than on the opposite side; its parietes were so much thinned that 'great apprehensions were entertained lest they should give way;' the limb was likewise oedematous; and yet everything proceeded as favourably as could have been desired, and the cure was completed within a shorter period than in several of the other cases which have been related. Mr. Liston's second case of femoral aneurism cured by compression, is also a good example; here the aneurism is stated to have been no less than sixteen inches in circumference.

"Again, aneurism not unfrequently occurs in individuals in whom the coats of the artery, between the tumour and the heart, are so much diseased that the vessel, instead of taking on the adhesive inflammation after the application of the ligature, ulcerates; or the ligature cuts its way through; or aneurism may occur in subjects labouring under valvular, or other disease of the heart. In such cases, the operation by ligature is contra-indicated, and would almost necessarily fail; whereas, pressure may be applied with the same prospect of success as in subjects in whom the heart and arteries are perfectly healthy. Indeed, in one of the earliest cases of popliteal aneurism treated by compression, since its re-introduction by Dr. Hutton, the patient was not considered a favourable subject for operation.

"Pressure is applicable to cases of the aneurismal diathesis, and when more than one aneurism exists at the same time; cases in which the operation by ligature is likewise contra-indicated; as well as to cases of spontaneous aneurism occurring in individuals of intemperate habits, or of broken-down constitution, in which the surgeon would not perform, without great reluctance, any operation. A few cases have been related in which the operation by ligature failed in consequence of some irregular distribution of the artery above the aneurism. Now, in such cases, compression promises to be equally effectual as in any other. Again, cases occasionally occur, where the patient has so much horror of a surgical operation, as to refuse to submit to it, although made acquainted with the risk of delay. Such individuals will gladly embrace any means by which they may be relieved from the necessity of undergoing an operation, and will cheerfully submit to any other method of treatment which promises a chance of cure. Indeed, it may be said to have been this accidental circumstance which led to the recent re-introduction of compression in the treatment of aneurism.

"Lastly, if pressure should fail to cure an aneurism (which, from the results hitherto observed, is very unlikely,) its employment will not preclude the subsequent operation by ligature; but, by retarding the increase of the aneurism, and assisting in the establishment of the collateral circulation,

it would tend rather to render the chances of the operation, by ligature more favourable.

**"OBJECTIONS TO THE TREATMENT OF ANEURISM BY PRESSURE ANSWERED.**

"I propose now to make some observations upon the objections which have been put forward against this method of treating aneurism, since its re-introduction in Dublin, and shall endeavour to reply to them.

"It has been urged as an objection to the treatment of aneurism, by pressure, that the arteries are few in number to which this mode of treatment is applicable; but what is really the fact? The artery, above all others, in which aneurism is most frequent, after the aorta, is the popliteal, and next in frequency come the femoral and the brachial. Lisfranc has given a table of 179 cases of aneurism (exclusive of those of the aorta) collected from various works, and of this number the popliteal artery was engaged in 59 instances, while the carotid was engaged 17 times, the subclavian 16, and the external iliac only 5 times. But even this must be much below the average, for few cases, comparatively, of operations for popliteal aneurism have been published (owing to its frequency,) unless there happened to have been some peculiarity in the case; whereas most of the operations upon the iliac, subclavian, and carotid arteries have been brought before the profession, on account of the infrequency of the disease in those vessels. It must be recollected also, that aneurism of the subclavian, or carotid arteries, near their origin, and of the common iliac, or innominate, which do not admit of the application of compression, do not admit either of the employment of the ligature. It surely, therefore, ought not to be urged against this method, that, because aneurism occurs in arteries beyond its reach, we should refuse to apply it, to vessels to which it is adapted; or that the practice should be denounced, because it is not applicable to every vessel.

"It has been objected to this method of treating aneurism, that the pulsation is likely to return, in consequence of the artery not being obliterated at the point to which the pressure is applied; and that the patient therefore cannot be considered safe from a relapse for a considerable period. Now, in my mind, a case of aneurism treated by pressure upon the artery above it, and according to the rules laid down, is much less likely to be followed by a return of the pulsation than one treated by the ligature, and for these reasons: the manner in which pressure brings about the cure of aneurism, appears to be very nearly that by which nature, under the most favourable circumstances, effects a spontaneous cure. The fibrine of the blood is entangled by the lining membrane of the aneurismal sac, successive depositions occur until the sac is completely filled, the tumour becomes solid, and all pulsation ceases. The sac no longer permitting the passage of blood through it, the collateral branches become enlarged, and the circulation is carried on by them. The tumour then gradually diminishes in size, owing to the absorption of its contents, and the gradual contraction of the sac, and, finally it disappears. On the other hand, when a ligature is applied to an artery, as, for instance, to the femoral, for popliteal aneurism, the current of blood into the sac is at once intercepted; after a time, however, the blood finds its way into it by the collateral branches: now, if an anastomosis of large vessels exists between the branches of the artery above the ligature, and those between it and the

aneurism, a strong current of blood will come to pass through the sac, and the pulsation will return, which cannot happen in the former case, for the reasons stated. The sac of the aneurism likewise, after the application of the ligature, not being necessarily filled by solid fibrine, but by a coagulum which may be more or less loose, pulsation is more likely to return, as the sac must contract considerably before the patient can be considered safe from a relapse; and this, from the inelastic nature of the parietes of the sac, must require, sometimes, a long time to be accomplished.

"It has been also urged as an objection to this mode of treating aneurism, that it is more tedious and more painful than the method by ligature. That it is less tedious, sometimes, several of the cases which have been published prove; indeed, in one of the last cases cured by compression, the pulsation in the aneurism ceased in a few days after the application of the two instruments; in some of the others the cure was also rapid; and if, in a few others in which this mode of treatment was adopted, a longer time elapsed, it depended probably upon the imperfection of the instrument, the irritability of the patient, or upon two compressors not having been employed together. With respect to the treatment by compression being more painful than the operation of placing a ligature on the vessel, including the subsequent dressing, until the ligature separates, and the wound is healed, this might have been an argument against the method, when so great a degree of pressure was supposed to be necessary, as would obliterate the vessel at the part to which the instrument was applied; but the fact is, the application of the compressor (according to the rules laid down now,) really relieves the pain which the aneurismal swelling occasions; after it has been applied, however, for a certain time, the pressure does cause pain, but the patient then can relax it, after having tightened the other instrument, and so continue to compress different points of the vessel for any length of time.

"It has been also urged, that the period which has intervened since the re-introduction of this method of treating aneurism is too short to allow us to conclude that the cures will be permanent. I do not know the exact length of time which is considered necessary should elapse before a cure in such a case can be pronounced permanent: two of the cases of aneurism treated by compression in this city, have remained well for upwards of two years, and two others for nearly the same period, and in none of the remaining cases has there been any tendency to, or appearance of a relapse. Now supposing, for argument sake, that the aneurism should return—the same thing has occurred after the application of the ligature, and if there should be a relapse, would not pressure be as applicable then as in the first instance? and would not its employment be much more certain and safe than the application of the ligature a second time?

"I think, then, from what has preceded, we are warranted in concluding:—

"1st. That the arteries to which pressure is applicable, being far more frequently the subject of spontaneous aneurism than those to which it is inapplicable, compression promises to supersede the ligature in the great majority of cases.

"2d. Pressure has several obvious advantages over the ligature, being applicable to a considerable number of cases in which the ligature is contra-indicated, or inadmissible.

"3d. The treatment of aneurism by compression does not involve the slightest risk ; and even if it should fail, its employment not only does not preclude the subsequent operation by ligature, but renders the chances of the operation by ligature more favourable.

"4th. Such an amount of pressure is never necessary as will cause inflammation and adhesion of the opposed surfaces of the vessel at the point compressed.

"5th. Compression should not be carried even so far as completely to intercept the circulation in the artery at the point compressed ; the consolidation of the aneurism will be more certainly and more quickly brought about, and with less inconvenience to the patient, by allowing a feeble current of blood to pass through the sac of the aneurism.

"6th. Compression by means of two or more instruments, one of which is alternately relaxed, is much more effectual than by any single instrument.

"7th. Compression, according to the rules laid down here, is neither very tedious nor very painful, and can be maintained, in a great measure, by the patient himself.

"8th. An aneurism cured by compression of the artery above the tumour, according to this method, is much less likely to return than where the ligature had been employed."

ART. 79.—*Popliteal Aneurism cured by Pressure.* By Dr. ALLAN.

(*Lancet*, Jan. 18, 1845.)

This was a case of a seaman, æt. 32, the subject of aneurism in the right ham. The tumour filled the entire popliteal space, pulsating strongly, and afforded other evidence of its aneurismal character. Pressure was commenced on the 27th of July, by the use of Liston's tourniquet, which was placed upon the femoral artery, below the origin of the profunda. In a few days a second tourniquet was applied directly over the tumour. He took at the same time tartar emetic and digitalis. By the 1st of September all pulsation had ceased in the tumour, and the pressure was even removed altogether for twelve hours, without its recurrence. By the 22d of October the man was discharged cured.

[A second case, even more rapidly successful than the former, is related at the meeting of the Medico-Chirurgical Society, on Jan. 14, by Mr. Greatrex, surgeon of the Coldstream Guards. The circulation through the tumour was completely suspended, and its contents became solid on the twentieth day after the application of the tourniquet. The compression was continued nine days after this, and in less than a month, the patient was able to walk about. A third case was communicated to the Surgical Society of Ireland by W. Newcombe, Esq., in which pressure was completely successful. The pressure was applied in the following manner:—One clamp was applied to the femoral artery, at the lower part of Scarpa's space, sufficiently tight to diminish without completely arresting the flow of blood through the vessel. The other clamp was applied higher up the limb, but not tightened. When the pressure from the first became inconvenient, it was loosened, and the second was tightened. By thus alternating the action of the instruments, permanent pressure could be maintained. No bandage was applied to the limb or over the tumour.]

*Dublin Journal*, March, p. 157.

ART. 80.—*Observations on Relaxed Rectum.* By HENRY HUNT, M.D.

(Lancet, Dec. 7, 1844.)

The author of the paper on this subject observes, that the most prominent symptoms of the affection are obstinate constipation, with tenesmus, the sensation of a load in the lower bowel, which is not relieved by an evacuation, and the discharge of a bloody mucus. The irritation frequently extends to the genito-urinary organs. On examination, the rectum is found to be preternaturally enlarged, and more or less filled with large folds of mucous membrane, which impede both the passage of the fæces and the introduction of the instruments. The consequences of mismanagement or neglect of this condition of the bowel are stated to be prolapsus ani, with irritable sphincter, and a species of intussusception of the upper and undilated part of the bowel into the lower and dilated part. The causes of the affection are habitual inattention to the calls of nature, and consequent over-distension of the gut. The treatment recommended by the author, and also by Mr. Bransby Cooper, consists in the avoidance of all aperient medicines, and the injection of a pint of cold water into the bowel every night previous to going to bed; the removal of the prolapsus, and the application of belladonna ointment to the irritable sphincter. A practical injunction is given by Mr. Cooper, to the effect that in all diseases of the rectum, the bowels should be relieved if possible at night instead of morning; because that in the latter case, the moving about during the day tended to displace the bowel, whilst that accident is prevented by repose in bed, after passing an evacuation.

*Paper read before the Medico-Chirurgical Society.*ART. 81.—*On Fungus of the Testicle.* By Professor SYME.

(London and Edin. Month. Jour. Jan., 1845.)

In 1808, Mr. Lawrence published a paper in the Edin. Med. and Surg. Journal, on what he called a "peculiar affection of the testis, attended with the growth of a fungus." His object in that communication was to point out a disease, which though of frequent occurrence in practice, had not been described by any surgical writer, and that castration was not necessary. "The patient has generally," says Mr. Lawrence, "assigned some blow or injury as the cause of the complaint, in other instances it has originated in hernia humoralis, and sometimes has appeared spontaneously. A painful swelling of the gland, particularly characterized by its hardness, is the first appearance of the disease. After a time, the scrotum growing gradually thinner, ulcerates; but the opening thus formed, instead of discharging matter, gives issue to a firm and generally insensible fungus. The pain abates, and the swelling subsides considerably when the scrotum has given way.

An examination of the part while the fungus still remains, discloses the fact that the growth has its origin in the glandular substance of the testicle itself; that the coats are destroyed to a certain extent, and that a protrusion of the tubuli seminiferi takes place through the aperture. It appears that the glandular part of the testis experiences an inflammatory action in the first instance, and that the confinement of the swollen substance by

the dense and unyielding tunica albuginea sufficiently explains the pain and hardness attendant on this stage of the disorder. Mr. Lawrence recommends the removal of the fungus by escharotics or ligature in preference to castration.

The examination of a portion of fungous growth, by Professor Syme and Mr. Goodair, discovered that it consisted of two textures, sufficiently distinguishable by their colour and arrangement. One is brown and disposed in straight lines, in a diverging manner, the other is white and granular, lying in the spaces left between the diverging rays. The former is composed of the tubuli seminiferi, while the latter is simply organizable lymph effused into the interstices. A further examination disclosed the existence of a "thin layer of substance possessing the characters of a granulating surface, so that the excrescence might be regarded as merely an extreme degree of exuberant granulation." The notice of this structure suggested to Mr. Syme the idea, that by the use of proper means, the fungus might be made to retrace its steps, through absorption of the white substance, and gradual approximation of the brown, and that the granulating materials of the surface might thus be enabled to complete the healing process. Pressure was obviously the agent on which reliance should chiefly be placed for producing the effect desired, and the most convenient mode of compressing the growth seemed to be that of inclosing it within its proper covering of the scrotum.

[In exemplification of the mode of proceeding, the following case is appended:—]

Andrews Ayton, æt. 26, admitted with fungous excrescence from the testicle, the size of a filbert. On the 15th May we cut round the fungus, and extended the incision above and below, so as to give it an elliptic form. The integuments were then separated on each side, and brought over the growth, and retained by three stitches. The wound did not heal by first intention, but the fungus did not reappear.

**ART. 82.—A new Species of Suture in Wounds of the Intestines.**

By Dr. GELY, Surgeon to the Hôtel-Dieu, Nantes.

(*Medical Times*, March 15, 1845.)

To procure union in wounds of the intestines, it is necessary, 1st. That the divided bowel be placed in perfect apposition. 2d. That the opening be hermetically closed, to prevent all risk of immediate or consecutive effusion. 3d. That the ligature be tied so, that its ends can be cut close to the knot, and that the ligature shall fall into the intestinal tube. 4th. To adopt a suture easily executed, and applicable, if not to all, at least to almost every case. 5th. To be able to close immediately the wound of the abdominal parietes, so as to obtain union by the first intention, thus obviating the danger attendant on the penetration of air into the peritoneal cavity. The author considers the foregoing conditions are accomplished by the suture he now proposes, and which is performed as follows:—A silk thread, well waxed, is furnished at each extremity with a common needle, whose size is somewhat greater than that of the thread, so as to render the passage of the latter easier. One of the needles is then passed into the intestine, parallel to the wound, at about two lines outside, and behind one of its angles, and brought out after piercing the interior of the

intestine about two lines from the wound; the other needle is made to perform the same manœuvre on the opposite side. The ligature is then made to cross the wound, the right needle becomes the left, and *vice versa*. This is repeated as often as may be necessary to close the whole wound; the threads, at the spot where they cross each other are next seized with a dissecting forceps, and the edges of the wound, while the threads are gently drawn upon, must be pushed inwards, by which means the opening is hermetically shut. When all the sutures are thus tightened, the two ends must be tied, and cut off close to the knot. In order to proceed with greater rapidity, as the threads are not visible at the part where they cross each other, a knot may be made for each suture, thus avoiding the necessity of tightening them separately when the operation is terminated. Care must be taken to pierce all the coats of the intestine in a direct line (to accomplish this, the edge of the wound must be seized between the finger and thumb, and gently pressed;) the stitches must be of equal length, so that both sides may correspond exactly. As the distance between the spots where the ligature enters and comes out of the intestine, is about three lines, there will be ten stitches, when the tube is completely divided, its circumference then being two inches and a half. Dr. Gely, after showing that his method is applicable to all kinds of intestinal wounds, even where there is a loss of substance, proceeds to combat the objections which may be made against it, and among them the number of times it is requisite to pass the needle through the coats of the intestine, and the liability to the formation of an obstacle to the passage of the fæces. This, though possible in dogs and smaller animals, can hardly ever take place in man; for in estimating the normal diameter of the intestine at three quarters of an inch, and taking into account the portion of the parietes turned inwards by the muscular contraction, and the inflammatory swelling, an opening of about three or four lines will remain in the centre of the diaphragm thus formed. For many other reasons, this momentary obstruction is not so dangerous as may be supposed—the stomach is generally emptied, shortly after the accident, by repeated vomiting—the peristaltic action of the intestines is probably suspended during the inflammatory stage, and finally, the patient taking no food whatever, the intestines consequently can contain no matter. The following case is a proof of the advantage of this method:—Mathurin Magré, ætat. 16, on the 4th December, 1841, at 8 p. m., after a hearty meal, received several stabs with a knife, on the left arm, shoulder, buttock, and flank; the first three were slight, penetrating only a little below the skin; the last, on the contrary, was very dangerous, situated near the inner edge of the quadratus lumborum, about the centre of the space comprised between the last rib of the os ilium. On examination being made soon after the accident, a portion of the intestine was discovered projecting out of, and strangulated by the wound in the abdominal parietes. In this state he was brought to the Hôtel-Dieu. The projecting portion of intestine, at least  $27\frac{1}{2}$  inches in length (some of the students said it was three feet and a quarter) together with a portion of omentum, spread out upon the flank, was exposed to the cold air, and to friction from his dress, for about two hours; the former was distended, voluminous, highly injected, and of a violet colour, from the accumulation of venous blood. The wound having been dilated with the usual precautions, the intestine was then reduced, each portion being carefully examined before it was returned. Two wounds were now discovered in the

centre of the protruded intestine. They were parallel to the circumference of the bowel, and were situated one just before the other. Their extent and position may be conceived, by supposing that the circumference of the bowel on its return was three or three and a half inches; to the extremity of the semicircle formed by each wound, the omentum was attached for a length of about four lines, and the portion of the bowel that divided each wound was ten lines in length. The opening in each wound was obliterated by a sort of hernia, formed by a protrusion of the mucous coats of the intestine, owing to the contraction of the muscular fibres of the bowel. Gas alone escaped from the wounded gut. Each wound was then united by the suture above described, the intestine replaced in the abdomen, the wound in the parietes united by strips of sticking-plaster, and prevented from re-opening by graduated compresses placed on each side, confined by a bandage round the body. Venesection was ordered as soon as the pulse became stronger, and was performed two hours after; abundant vomiting took place during the night. No consecutive accidents occurred, and twenty days afterwards the patient could eat bread without inconvenience, and soon after was as well as before the accident.

*Annales de Chir.* Nos. xlviii, xlix.

ART. 83.—*Treatment of Mortification.* By SIR B. BRODIE.

(*Medical Times*, March 1, 1845.)

[The interest which was excited a few months back by discussion in a public journal upon the proper treatment of gangrene, renders the following remarks peculiarly worthy of recollection :]—

“When inflammation ends in mortification, you may (sometimes with the greatest advantage) employ the same treatment which you would adopt to check inflammation under other circumstances, that is, to take away blood from the arm: I have done it repeatedly with the best effects—I have done it repeatedly even when vesications have formed; and they have been checked, and so has the mortification. But there are cases in which the patient will not bear the loss of blood, and if either by this or any other means you lower the strength, instead of checking, you increase the mortification. If, then, blood-letting be sometimes advantageous, sometimes mischievous, what are the cases in which it is or is not to be employed? I can give no directions here; you must trust to practical observation, and in such cases the practical surgeon has great advantage over the scientific physiologist. If the patient be a strong, robust individual, having no symptom of weakness about him, you may take blood with advantage, and perhaps it may be necessary to repeat it several times; but if he be of a bad constitution, or a gin-drinker, or one broken down by the abuse of mercury, his pulse small, weak, and very frequent, his countenance anxious, and his powers gradually failing, I say, in such a case you should not venture to take blood, but resort to another plan. You will meet with many cases where you will be able to say *here I will bleed*, and with others, *here I will not bleed*; but there are also intermediate cases where you cannot so easily decide; therefore, in such cases, if you take blood, let it be done cautiously; or begin your lowering plan of treatment by diminishing the allowance of wine or other cordials; observe its effect, and then pursue the one or the other plan according to circumstances. When I speak



of blood-letting in these cases, you will observe it influences also the other treatment. Where you employ blood-letting with advantage, there you may also give active purgatives, calomel and antimony, salines and antimony, and only barley-water to drink; but when blood-letting is not proper, then, in all probability, it will be requisite to support the patient by giving him ale or spirits; this refers more especially to gin-drinkers, and in such persons these will actually diminish the inflammation, as well as check the mortification. You will see the effect of this treatment in two different classes in cases of sloughing of the penis. A man has a chancre, which he has neglected; the process of mortification is going on rapidly; he has a hot skin, white tongue, and a rapid weak pulse; give such a patient wine or stimulants, and he will be worse; but bleed and purge him and you check the mortification at once. I have known cases where nature has cured the disease, while a timid surgeon was undecided whether or no he should bleed, because there was mortification going on. Perhaps in the course of the disease a large artery has been opened, and the patient has lost a pint of blood before it could be arrested, but afterwards has begun to recover immediately. Another patient comes to you in a bad state of health, with a pale, anxious countenance, and a small feeble pulse; give such a one wine and opium, and you stop the progress of the disease."

ART. 84.—*On an Easy and Certain Method of performing Catheterism, even in the most difficult cases*; Memoir read by J. G. Maisonneuve, D.M.P. "In the hands of the ablest and most experienced surgeons, catheterism, in cases of retention of urine, is often a difficult, and sometimes a dangerous operation, and in those of an inexperienced surgeon, it is a daily source of serious accidents. Of late numerous methods have been proposed to facilitate this operation, and Dr. Maisonneuve proposes the following: Introduce into the urethra a very small gum-elastic bougie, and when it has reached the bladder, slip over it a catheter open at both ends. The passage of the latter inwards is facilitated by a bit of silk passed through it and then tied to the extremity of the bougie. To cause the catheter to penetrate easily and without pain into the bladder, it is sufficient to push it onwards on the bougie, drawing gently all the time on the silk. This method has succeeded in all the cases in which the author employed it, some of these being very difficult ones; and from these facts he concludes:—1st. That catheterism, performed in the way just described, is of all the known methods the easiest and most certain. 2d. That it succeeds wherever the other methods are applicable. 3. That it succeeds where the others fail. 4th. That it sets aside all painful trials, all ruptures of the canal, all false passages, and all the accidents which they give rise to. 5th. That, to perform it, no peculiar skill is needed; on the contrary, it may be employed by persons not at all accustomed to such an operation. 6th. That it enables us to set aside the numerous instruments proposed to overcome the different obstacles encountered."

*Medical Times*, Jan. 25th.

[The originality of this mode is denied by Mr. Barrington, who has witnessed its application as long as 15 years back by Dr. Hutton of the Richmond Hospital.]

*Lancet*, March 15th, 1845, p. 309.

**ART. 85.—On a New Method of Obtaining the Obliteration of the Cavity of an Abscess lined with a Pyogenic Membrane.** "Dr. Moreau Bontard, of Versailles, in a case of chronic abscess of the buttocks, complicated with a very minute fistulous opening, employed the following subcutaneous method, which may be considered as a modification of the mode of scarification of the tunica vaginalis employed by Professor Velpeau in hydrocele. The patient was placed on the right side, the left lower extremity was bent so as to make the abscess as prominent as possible: it was then opened with a sharp bistoury near one of its borders. In the opening a probe-pointed bistoury was introduced, the blade near the handle being previously covered with a bit of linen to avoid jagging the aperture, and six scarifications were made, all converging towards the same spot, three on the pseudo-membrane corresponding to the deep-seated parts, and three on that lining the integuments. The bistoury was now removed, and by gentle pressure the cavity was completely emptied of the pus, mucus, and blood it contained, and the admission of air carefully guarded against. A bandage was then applied, cold fomentations were prescribed, and the patient was ordered to remain quiet. This plan was persevered in for three days, when the cure was completed, without fever or any other unpleasant symptom having made its appearance. An effusion of plastic lymph had taken place into the cavity of the abscess, which, by causing adhesion of its sides, had obliterated the sac. Absorption of the surrounding textures had also taken place, for, on pressure being made over the former site of the abscess, which pressure was not productive of pain, no *engorgement* nor induration could be discovered on the eighth day after the operation."

*Bulletin de Thérapeutique, and Medical Times, March 22, 1845.*

**ART. 86.—Extirpation of the Os Coccygis for Neuralgia.** A lady, aged 25, had been suffering from derangement of her general health and neuralgia for ten months before she came under Dr. Nott's care, at which time her condition was deplorable.

Suspecting that disease or displacement of the os coccygis had become a source of irritation to one or more nerves in its vicinity, Dr. Nott made an examination of the whole spine, and found no tenderness until his finger touched the point of the os coccygis, when the patient screamed with pain. He proposed extirpation of the bone, to which the patient assenting, it was performed as follows:—An incision was made down to the bone, extending from its point two inches upwards; the bone was then disarticulated at the second joint, the muscular and ligamentous attachments divided, and the two terminating bones were dissected out without much difficulty. The last one was found to be carious and hollowed out to a mere shell; the nerves were exquisitely sensitive. The operation, though short, was attended with extreme suffering. For several hours afterwards, the pain was extremely violent, coming on every ten or fifteen minutes, and accompanied by a sensation of bearing down, like labour-pains. Morphia, in large doses, and other anodynes, afforded no relief; the pains became gradually less frequent and violent, the wound healed, and at the end of a month the local disease disappeared, and the general health was much improved.

At the next catamenial period, or shortly afterwards, she was attacked with very severe pain, referred to the vagina, uterus, and back, which con-

tinued for about four days ; on examination, several points of the vagina were found to be exquisitely tender to the touch. Under the use of the citrate of iron, in doses of five grains three times a day, continued for two months, the patient ultimately recovered perfectly, and at the date of the report had been three months without any relapse.

*American Journal of Medical Sciences, and Dublin Medical Press, Jan. 15th.*

**ART. 87.—***On the Treatment to be pursued in the Admission of Air into the Veins.* The plan here mentioned is one given in a monograph by Dr. Wattman, upon the subject of the admission of air into the veins, and is said by the author to be a certain means of preventing the fatal consequences.

The plan consists in the instant closure of the orifice in the vein by the finger, and dashing cold water into the face, if the patient has already experienced symptoms of delirium. The permanent closure of the vein is to be effected, either by gently closing and uniting the lips of the wound, or by ligature or torsion.

*American Journal of Medical Sciences, Jan. 1845, p. 173.*

**ART. 88.—***On the Treatment of Venereal Diseases.* By Mr. CARMICHAEL.

*(Medical Times, April, 1845.)*

The following remarks are a resumé of Mr. Carmichael's opinions :—  
 1st. He does not think mercury necessary in the treatment of the simple primary ulcer without induration, nor for the papular eruption, and other constitutional symptoms it produces ; but should the eruption linger into the fourth or fifth week after it has desquamated into scaly spots or blotches, mercury in alterative doses, either in the form of Plummer's pill or the proto-ioduret of mercury, will be of service in clearing the skin of the eruption, and in removing the pains of the joints, which are constantly present in this form of venereal. It should never be employed at the period when the eruption first appears in its papular form, at a time that is usually preceded and accompanied by considerable fever, like all the other exanthemata, to which class of Cullen it obviously belongs. If mercury is exhibited prematurely during the eruptive stage of this as well as the other forms of disease, the scaly excepted, the skin may be cleared of the eruption, but in all probability it will return again and again to the great disappointment of the patient, and perplexity of the medical attendant.  
 2d. Mercury should be given in iritis, so as to excite its full effect upon the system ; the usual antiphlogistic measures to remove this dangerous inflammation are not to be neglected. 3d. Mercury is to be given for the removal of nodes, for which purpose the iodide of that mineral is superior to any other preparation. 4th. In phagedenic primary ulcers mercury is always most injurious. They are most successfully treated by the application of strong nitric acid, immediately followed by a douche of cold water. The same application is also the most efficient for phagedenic ulceration of the throat, which, if not checked, will soon extend over the velum, uvula, and back of the pharynx, from whence it will spread upwards into the nares, and downwards into the larynx. Instead of the douche of cold water, in this situation inadmissible, a probang must be used, the sponge of which, moistened in a solution of soda or potash, will neutralize any superabundant acid applied to the ulcers. During the eruption of pustules or

tubercles, which cause those crusts termed rupia, mercury is decidedly injurious, although its exhibition may at first flatter both patient and surgeon, that the disease is yielding to this remedy. But the natural tendency of this eruption is also to become scaly after it has existed several weeks or months. This scaliness is a sign that the disease is on the decline, and indicates that mercury in alterative doses may then be employed with safety and advantage. Should any of the constitutional ulcers on the skin spread after the rupia crusts fall off, their progress may also be effectually checked by the application of nitric acid to their phagedenic margins. They of themselves first show signs of healthy reparation in their centres, which need not therefore be meddled with. Mercury, in this stage of the disease, should not be exhibited. Hydriodate of potash, sarsaparilla, country air, and the tranquillizing effects of opium, should the patient be harassed by extensive ulceration, are the constitutional means most to be relied upon. 5th. For the true Hunterian chancre with hardened edge and base, and for the scaly eruption which attends it, as well as the deep excavated ulcer of the tonsil, nodes, and other symptoms belonging to this form of disease, mercury may be esteemed a certain and expeditious remedy.

ART. 89.—*On a Simple Means of Arresting Bleeding from Leech Bites.* The troublesome and occasionally fatal effects of hemorrhage from leech bites, especially in children, has led to a great number of devices for the purpose of arresting the bleeding. Mr. Gosset recommends the following plan, which, from its extreme simplicity, is worthy of universal publicity. "After wiping away the blood he applies quickly a piece of visiting card, cut into a circular form about the size of a silver penny, the glazed side being applied to the wound. This must be pressed firmly into the wound, and held there about a minute; it will then become firmly glued to the part and effectually restrain further hemorrhage." In this way Mr. Gosset has continually arrested hemorrhages which had resisted caustic, acetic acid, &c.

*Lancet*, Nov. 9th, 1844.

ART. 90.—*On the Possibility of Diminishing the Volume of Hernia, and aiding their Reduction by Internal Treatment.*

By M. DIEFFENBACH, Professor in the University of Berlin.

(*Gazette des Hôpitaux*, No. 10. *Encyclographie des Sciences Médicales*, Feb. 1845, p. 212.)

"It is possible, even in many cases in which the taxis has failed, to procure a most advantageous result by internal treatment. This treatment consists essentially in causing the patient to maintain the recumbent posture for a long period, instituting at the same time a certain dietetico-pharmaceutic regime. The number of cases in which the author has been successful is surprising. Those who, in consequence of the immense size of their hernia, were unable to wear a truss, have by this means had the volume of the tumour so much reduced as to render the application of that instrument both safe and efficacious. M. Dieffenbach commences the treatment by confining the patient *bonâ fide* to bed; he will not allow anything short of this, for if the patient be permitted to recline on a sofa in his day costume, or to sit up in bed even, the beneficial effects of the plan are entirely done away with. The patient then takes, morning and night, Pullna water in doses sufficient to ensure watery stools. It is, however, of importance not to persevere too long in drastic purgatives, but to vary them by the occasional substitution of the compound rhubarb pill. Eventually he gives nothing more powerful than castor oil.

"During the whole of this treatment, food either of a very nutritious or indigestible character must be carefully interdicted. Indeed, the aliment should always be given in the form of broth. The tumour should at the same time be submitted to local treatment, varying it according to the nature of its contents. If the hernia contains only intestine, and there is no adhesion, cold compresses are indicated; if, on the contrary, omentum forms part of the tumour, warm fomentations will be more suitable.

"By these means, M. Dieffenbach states that he has frequently seen the most voluminous hernial tumours diminished by half in the space of eight days."

#### ART. 91.—On the Operation of Tracheotomy.

By ROBERT LISTON, F. R. S., Senior Surgeon to University College Hospital.

(Condensed from the *Lancet*, Nov. 1844.)

The trachea requires to be opened for the extraction of foreign bodies. In this case no time is to be lost, as fatal symptoms may arise at a moment's notice. If the foreign body is loose, it will sometimes fall out by itself as soon as the opening into the trachea is made. At other times, they will not come away for a day or two after the operation. If it be situated above the opening, it may sometimes be disentangled and extracted by a bent probe. It is usually, however, found below; in this case, after having ascertained its exact situation by the probe, it must be extracted by the forceps.

Tracheotomy is also necessary on account of acute disease. Sometimes, in cases of *scalded glottis*, the symptoms become so alarming as to render the operation indispensable. It is occasionally also required, in consequence of wounds in the neck, where suffocation is threatened in consequence of extravasation into the tissues. *Edema of the glottis* is another affection which sometimes imperatively calls for the operation. In all these cases, we must not wait until death is imminent before we open the trachea, but do so while the lungs and head are as yet unaffected. In some cases of ulceration of the larynx, an opening is made in order to enable the patient to breathe more freely, and to give the ulcers time to heal. The latter indication may be promoted, by touching the diseased part with a solution of lunar caustic.

In *acute laryngitis*, if the disease be confined to the larynx, it may be necessary to open the trachea. In *croup* no benefit will ensue from the operation, because the trachea, and even the ramifications of the bronchi, are involved in the disease. We are not justified in having recourse to it in the first instance; and after effusion of lymph has taken place, no good can be expected from the proceeding.

When the operation is decided upon, it becomes a question whether the larynx or the trachea is to be opened; under some circumstances cutting into the crico-thyroid membrane will answer the purpose. In cases where there is obstruction at the *Yima glottidis*, as where swelling has followed a scalding of the parts, the high operation may answer; and in cases where a foreign body is lodged in the ventricle of the larynx, an opening in the crico-thyroid membrane may suffice, and in that case should be preferred, as being more simple than tracheotomy. It may be accomplished with any pointed instrument, as a penknife, and without any great incision. This operation will also answer exceedingly well in cases of suffocation caused by the impaction of a foreign body in the *œsophagus*, and many persons have been thus saved. But in the majority of cases tracheotomy is to be preferred, whether the impaction of a foreign body in the lower part of the trachea, or in cases of *œdema* and other diseases of the glottis; for by this operation you get a free opening, and one at some distance from the seat of the disease, which is a point of some importance.

The operation itself is not attended with much danger, as the incision to the windpipe can be made without involving any vessel of consequence. There are sometimes large arterial branches running across the windpipe, but not often; the chief obstacle is the presence of the thyroïdal veins. The wound heals with

great rapidity; too fast indeed in some cases; for when the operation has been performed for the extraction of a foreign body, blood will sometimes be extravasated, or drop into the trachea and cause suffocation. The best plan, therefore, is to put a bit of lint between the edges of the wound, and cover its surface with a pledget dipped in cold water and frequently renewed. After the incision has been made six or eight hours, the edges may then be brought together, and will speedily unite.

There is little difficulty in getting down to the windpipe in an adult patient, if he is steady, and willing, as they generally are, to be relieved from impending suffocation. The patient is placed in a chair, and an assistant bending back the head, an incision is made from the top of the sternum upwards towards the cricoid cartilage, fully an inch in length, and going through the skin and subjacent tissue. You expose at once the sternohyoid muscles, and cut through them, the veins and the isthmus of the thyroid body are then pushed on one side, and a clear space is thus exposed for making the opening into the trachea. The patient is then to be desired to swallow his saliva, and while the windpipe is raised by this act, the knife is to be pushed into it, and two or three rings to be cut across. If this has been done in consequence of the presence of a foreign body, this will generally fly out the moment the incision is made, and in consequence of the relief to the respiration and the cessation of struggling, the bleeding, principally venous, will cease of itself. Should it happen, however, that there is hemorrhage from an arterial vessel, it must be secured. In cases of permanent or long continued obstruction at the top of the windpipe, it will be necessary to introduce a tube. There is no sound objection to this instrument. Mr. Liston states that he has tried it more than twenty times, and that it does not cause irritation. He condemns the curved canula and trochar as unsurgical.

The operation is far more difficult in children than in the adult, as the neck is shorter and more laden with fat. The patient, if a child, must be well secured, and the operation is then to be performed as above described, with this exception, that as we cannot get the child to swallow its saliva, the larynx must be raised by a very sharp hook. The time for which it is necessary to wear the canula varies according to the nature of the disease for which the operation is performed, the only precautions necessary, in connection with it, are to keep it clean, and to cover the orifice with some loose texture, to prevent the admission of cold air.

[In a late number of the *Medical Gazette*, Mr. Cock speaks in very favorable terms of the curved canula and trochar in the operation of opening the trachea. Its principal advantages over the ordinary method, as stated by him, are a saving of time, which in some cases is a matter of great consequence; and the power it gives to the medical attendant of dispensing with assistance. The method of using the instrument, is first to cut boldly down to the larynx, and then to introduce it as in the ordinary operation for hydrocele, the concavity of the instrument of course looking downwards.]

#### SECT. IV. RARE SURGICAL CASES.

**ART. 92.**—*Complete Dislocation of the Tibia forwards, produced by Simple Extension.* By Dr. FELIX JACQUOT, of St. Die.

(*Archives G n rales*, April 1845, p. 475.)

A serjeant, 21 years of age, of robust habit, entered the Military Hospital of Instruction at Metz, July 23d, 1844. Half an hour afterwards he met with the following accident:—Making a long jump of nearly four yards, upon a flat surface, he fell, contrary to the gymnastic laws, upon the left foot, the leg extended and directed backwards, whilst the right leg, being in advance, did not reach the ground. He experienced violent pain, and fell forwards upon his belly. A dislocation of the tibia forwards had occurred; this was evident, on the simple inspection, from the very marked characteristics of such an accident. It is absolutely impossible to confound it, when recent, with any other lesion.

The thigh formed an obtuse angle with the femoro-tibial articulation, so that the axis of the leg was placed considerably in advance of the axis of the thigh. The superior surface of the tibia was covered by the patella, the subcutaneous surface of which presented forwards and upwards. The condyles of the femur were felt in the popliteal space under the distended skin; but the pulsation of the artery was not felt so superficially as usually described; it was obscured in the space between the condyles. The triceps projected, and the tendons of the crural muscles, inserted internally and externally into the tibia and fibula, were stretched, and formed two bent cords, posterior to the concavity. The limb was very mobile, flexed easily, and without pain; extension was more difficult, and attended with some pain. The foot turned inwards or outwards, according to the position given to the limb. The shortening did not exceed one inch and a quarter.

A swelling, scarcely perceptible, existed at each extremity of the transverse diameter of the knee. The patient suffered very little. No ecchymosis could be perceived, and M. Jacquot was inclined to think that if anything was ruptured, it must be the crucial ligaments, and some fibres of the gastrocnemius muscles; it was evident that the tendons were intact.

Extension was made, and the limb being stretched moderately by three individuals, in a few seconds the reduction was effected. A fracture extension bandage was employed for 20 days, removing it occasionally, when flexion was effected without difficulty by the surgeon, but not by the patient without the assistance of his hands. There was slight swelling the first few days which then subsided. No pain in the knee but pain in the sole of the foot and along the tendo-achillis, particularly at its insertion. This pain lasted a long period, was at times very intense, and did not appear to be caused altogether by the apparatus. When the apparatus was removed, the patient could very partially bend his leg, but, by degrees, the power of voluntary motion returned, and by the 30th of August the power of flexion was, to a great extent, recovered, and he could limp about 20 paces without assistance. The left knee was at this time still somewhat enlarged. On the 3d of September he walked without limping, experiencing only towards the evening rather more than usual fatigue.

M. Jacquot remarks that Velpeau and others deny that a dislocation of the knee can be produced by flexion or extension alone, and that this case tends to invalidate that opinion.

He gives a complicated theoretical explanation of the manner in which this happened, but the simple view of the case taken by the editor of the "Archives" is doubtless the true one. "There was not only extension of the leg, but also a rapid fall of the body towards the earth; that is to say, a force which tended to slip the condyles of the femur over the articulating surface of the tibia. It appears to us that the combination of two forces tending to produce the extension of the leg and the rapid fall of the femur downwards, might very easily produce a dislocation of the tibia forwards.

ART. 93.—*Gangrena Penis and Fistula Urinaria, produced by external Violence of a peculiar nature.* By Professor MÖLLER, of Elsingore.

(*Bibliothek für Läger, 1844.*)

J. A., a Prussian sailor, apparently of a phlegmatic temperament, was brought to the Royal Hospital, on the 22d of April, where he gave the following statement:—Eight days previously he had fallen upon a handspike, thereby receiving a severe contusion in the region of the pubes. The pain thereby from the penis to the umbilicus was very intense. Considerable swelling of the abdomen and penis, with discoloration of the latter, supervened, with thirst, bitter taste in the mouth, and restlessness. The bowels had been well opened the night before, some blood had however passed, together with the fecal matter. He believed that he had passed no urine lately. Much debilitated by his sufferings, and of a dull and stupid nature, his explanation was exceedingly unsatisfactory. Upon investigation, the skin of the erect and much swollen penis was found to be black and hard, in a state of sphacelus. On the glans, several ulcers, painful to the touch, were

seen. The skin around the root of the penis was also hardened and discolored. On the lower part of the abdomen, a hard, somewhat elastic, tumour, reaching from the symphysis pubis to the navel, was observed. Pain only produced by a considerable pressure upon the abdomen. Pulse small, 75. Tongue yellowish. Thirst and want of sleep. By means of the catheter, about two quarts of urine, deeply tinged with blood, were evacuated. No difficulty in passing the instrument was experienced. The tumour, after evacuating the bladder, was immediately lessened, the pain diminished, and the patient soon fell into a deep sleep. Twenty leeches applied to the region of the bladder, with warm fomentations.

*April 23.* In removing the necrotised skin and cellular tissue, a deep suppurating wound upon the inferior side of the penis, anteriorly to the scrotum, was laid bare. In this, a hard body, subsequently discovered to be a ring of metal, was found completely surrounding the root of the penis. With some difficulty this ring was removed by means of a fine elastic saw, and, as it was one of that description usually employed to string keys upon, in which the extremities are not united together, the affair was soon over. At one spot the ring was deeply hacked, in all probability by the patient himself, during his endeavours to get rid of it. Through a perforation in the bulbous portion of the urethra, flowed urine, mixed with blood and some matter. Rather more than a pint of urine was drawn off by the catheter. Patient low, depressed. Pulse small and quick. *R* Ammon. carb., gr. v; opii puri, gr. j; sacchari albi, gr. xv; *M. ft. pulvis*, 4 horis.

*April 24.* Patient had enjoyed no sleep. Continued fever. Pulse 96, rather full. Considerable tension of the belly. No urine having been voided, an elastic catheter was passed, through which two quarts of urine, slightly mixed with blood and pus, were extracted. Some pain was caused in introducing the instrument through the pars prostatica, although it passed easily. Excepting the small quantity of bloody pus above mentioned, the urine was clear, and without any abnormal scent. The pains in the penis less severe, and the glans presented a clean suppurating wound. Another portion of the necrotised skin and cellular tissue removed. The patient being costive, a solution of Epsom salts was administered.

*April 26.* Fever increased. Tongue parched, dry. Great thirst. Urine had been evacuated twice a day, by means of the catheter. Ordered, *Mist. acida mineralis*, a tablespoonful every second hour.

*April 27.* The remainder of the hardened skin removed. Pains in the penis slight. Urine continued to be passed through the catheter. General condition about the same.

*April 28.* Clean suppurating wound. No sleep during the last night. A considerable quantity of urine with bloody pus had flowed through the wound in the urethra. Pulse 120, small. Scrotum excoriated by the urine. Ordered, *Ceratum simplex*, and emollient poultices.

*April 29.* Great thirst. Diarrhœa of greenish colour. Pulse 130, small. Ordered wine.

*April 30, evening.* Diarrhœa had ceased. Oppression in the cardia, hiccough, debility, pain near the anus. Pulse 140, irregular. *R* Acid. hydrochl. diluti, 3iss; aquæ puræ, ʒvj; syrapi diacodii, 3vj; d. ʒj, every hour.

*August 1.* Vomiting. Diarrhœa, in which a lumbricus passed. Restlessness. Hiccough. Low and irregular pulse. Wound in the penis dry, yet covered with granulations of a healthy appearance.

*August 2.* Night passed in much pain and distress. Hiccough. Vomiting of a stinking fluid. Great debility. Collapsed countenance. Cold extremities. Meteorismus. Granulations had assumed a blueish colour. Pulse 150, very irregular. Consciousness remained to the last. A pint of thick, reddish, stinking urine, mixed with matter, was drawn off through the catheter. Shortly before two p.m. he died, taking with him to the grave, the secret whether he himself or another had placed the ring where found. Although often questioned concerning this, he continued firm to his first statement, viz., that he knew nothing about the ring.



*Sectio cadaveris, twenty hours after death :—*

1. In the urethra, a large ulcer, about four and a half inches from the orifice.  
 2. In the abdomen, much urine, mixed with matter. The fundus and a considerable portion of the corpus vesicæ were in close adherence to the parts around, with great alteration of structure and consistence, almost gangrenous. On the cervix vesicæ were two small openings, with rounded margins. Several small holes in the fundus seemed rather produced in the attempts to separate the bladder from the other parts, to which it had become so closely attached. On the external lining of the intestines was seen a considerable exudation of plastic lymph, in some places almost amounting to pseudo-membranous consistency. A little matter was also seen, but in no place amounting to a larger depot. The ileum, on the side opposed to the insertion of the mesenterium, was slightly injected. Other organs in the abdomen and chest, in a healthy condition.

*ART. 94.—Remarkable Case of Injury to the Brain.*  
 By Dr. O'CALLAGHAN.

(*Dublin Medical Press*, Feb. 1845, p. 82.)

This case, which is perfectly authentic, and one of the most remarkable on record, occurred in the person of an officer in the Ceylon Rifle Brigade. The case was one of accidental bursting of a fowling-piece, which inflicted a deep and severe wound in the forehead, immediately above the nose. The patient was knocked down by the explosion, but immediately recovered his feet, and walked to a neighbouring cottage with assistance. When seen by his surgeon, the wound was circular, and continually discharged a bloody serum, mixed with pus. Pus, as well as fragments of bone, likewise passed from the nostrils. The patient recovered under the most simple treatment.

The officer soon after this returned to his duty, but in a few months was much incommoded by a metallic substance which began to protrude through the palate, accompanied by the most offensive discharge, which, however, he was unconscious of, as the sense of smell had been entirely destroyed by the accident. In four months' time, the metallic body had protruded so far that an attempt was made to extract it, but was not persisted in on account of the excessive agony of the operation. Things remained much in the same state until the next year, when the patient died from imprudence in drinking. On examining the head after death, *the whole of the iron breech of a gun, with the screw attached, were found lodged in the forehead.* The weight of this mass of iron, which had so long remained quiet in its extraordinary situation, was near 3 oz.

*ART. 95.—Luxation backwards of the Axis on the Atlas.*

By M. HIRIGOYEN.

(*Bulletin Méd. de Bordeaux*, and *Med. Times*, Jan. 11, 1845.)

"Two cases only have as yet been recorded of this affection; one by J. L. Petit, the other by Sir Charles Bell. The present case presents therefore, some interest: John Dumé, æt. 60, was brought at 8 p. m. to the Hospital St. André, Bordeaux. This man, by trade a mason, while on a scaffolding about fifteen feet from the ground, lost his equilibrium, and fell on his head on some sand. When examined immediately after by M. Chaumet, chief surgeon of the hospital, and M. Hirigoyen, his state was as follows:—deep coma, eyes shut, no deviation of the features, respiration quiet, though somewhat weak and slow; pulse very weak, 58; muscles flabby, and not contracted; no blood had flowed from the ears and nose; no wound or contusion; vertebral column straight; slight exco-riation of the skin on the inside of the right carpo-radial articulation; head thrown backwards, though not more so than, that of a corpse when placed in a horizontal position; as mobile as when uninjured. These symptoms seemed to indicate cerebral concussion, consequently sinapisms were ordered to be put on the lower extremities; purgative enemata to be employed, and blood to be drawn if the pulse became stronger; but all was useless; the intensity of the symp-

toms did not decrease in the least and the patient breathed his last the night following the accident. *Post-mortem* examination: Impressed with the idea that the man had died from cerebral concussion, the skull was carefully removed, but no effusion of blood, nor any other lesion of the brain, could be discovered, and it was only on taking this viscus out of the cranium that the cause of death was perceived. The medulla oblongata was pushed backwards, and somewhat flattened against the posterior portion of the atlas, on a level with the lower third of the corpora pyramidalia; the inferior portion of the brain, the cerebellum, and the pons varolii, presented no lesion; through the spinal dura mater, a blueish tint was perceptible anteriorly, produced by an effusion of blood between that membrane and the vertebræ; and a considerable eminence, the cause of the flattening of the medulla oblongata, was discovered. When the dura mater was divided, the eminence was found to be formed of the odontoid process, placed behind the transverse ligament, somewhat more to the left than the right; right odontoidian ligament entire, whilst the left was torn near the processus dentatus; the former crossing the transverse ligament, and preventing the apophysis from rising above it, or pressing the medulla to a greater extent; the articular surfaces were separated from each other; no fracture; nothing abnormal in any other of the viscera."

ART. 96.—*Fracture of the Costal Cartilage, and Rupture of the Vena Cava.*  
By RICH. PYPER, Esq., Assistant-Surgeon 11th (Prince Albert's) Hussars.

(*Lancet*, Oct. 1844.)

"H. P.—, aged 25, a driver in the Royal Horse Artillery, on the 21st of June, 1844, was thrown from his horse, and two of the wheels of the gun-carriage passed over the body. When I saw him, about two minutes after the accident, he was lying on his left side, with his body in a bent position, using violent convulsive motions of the upper and lower extremities. The respiration was difficult and oppressed, and the countenance pallid. The pulse was quite imperceptible at the wrist, and the heart's action scarcely audible: he was insensible. I had him immediately moved to a short distance out of the way of the guns, and whilst being removed, the muscles of his trunk and extremities became completely rigid and fixed, as if all the voluntary muscles were affected by tonic spasm; there was no mark of injury of the head. From the nature of the accident and the symptoms above detailed, it struck me that some internal viscus was injured, and that consequent extravasation of blood was taking place; so, to give the poor fellow what I conceived to be his only chance, I opened the jugular vein, which at first bled pretty freely, and for a time his breathing appeared more tranquil and easy; but the muscles became quite relaxed, and the heart's action gradually slower, till it entirely ceased, and he died in about ten minutes from the time I first saw him. He lost about three ounces of blood from the jugular vein.

"*Examination of the body twenty hours after death.* There was no external mark of bruise or injury on any part of the body. On removing the integuments, a considerable quantity of blood was found effused under and at the lower border of the great pectoral muscle on the right side, and on removing the muscular parts, there was presented on the same side a fracture of the cartilages of the sixth, seventh, and eighth ribs. The cartilage of the sixth rib was fractured about half an inch from its costal articulation, and the cartilages of the seventh and eighth ribs, which are naturally united together, were fractured about midway between the ends of those ribs and the sternum. The ribs themselves were uninjured. The sternum was fractured just below its articulation with the cartilage of the fifth rib; and the lower portion of sternum, together with the portions of the cartilages of the sixth and seventh ribs attached to it, were very little, if at all depressed; in fact, the fascia covering the sternum anteriorly was quite free from laceration, but the costal pleura was found ruptured beneath the situation of the fractured cartilages. On opening the cavity of the thorax, the whole anterior portion of the lower lobe of the right lung presented a dark livid appearance,

and was greatly congested with blood. All the other parts of lungs were quite free from injury. About two ounces of coagulated blood were found in the right pleural cavity, which appeared to come from that effused under the great pectoral muscle, for the pleura covering the bruised portion of the lung was in no place lacerated. On opening the pericardium, it was found filled with fluid blood, which came from a laceration in the ascending vena cava, extending from the internal surface of the pericardium to the right auricle of the heart; the pericardium was not injured in the least, but greatly distended with the blood it contained. The heart was small and extremely hard, and all its cavities were contracted and quite empty. The liver was uninjured and the gall-bladder empty. The spleen was ruptured on its convex surface, and about an ounce of blood was effused into the abdominal cavity. All the other viscera were uninjured.

*Remarks.* The rupture of the vena cava might, in this instance, have been produced by a violent contraction of the heart suddenly arresting the return of blood to the right auricle, at the same time that the vein was being obstructed lower down. The vein was ruptured longitudinally, and in that situation it is well protected anteriorly by the lower lobe of the right lung and pericardium; and although that portion of the lung was very much bruised, yet the pericardium was quite uninjured; also the empty state of the heart's cavities, and the contracted state of muscle itself, pointed out some unusually strong action of that organ previous to death. However, the immense force which must have been applied to cause a fracture of the yielding cartilages, might have been sufficient of itself to have ruptured the vein when distended, though the fractured portion of sternum was very little, if at all, depressed; for Cruveilhier states (*Anatomie Descriptive*,) that "La flexibilité des côtes et de leurs cartilages permettant une forte dépression sans fracture du sternum, on s'explique la possibilité de contusions et même de déchirures du cœur, des poumons, des gros vaisseaux, sans fracture des os du thorax." Moreover, the great distensibility of the vein would lead one to doubt very much the possibility of its being ruptured by the heart's action alone.

The possibility of the cartilages of the ribs being fractured without previous ossification I find denied by Boyer; however, Mr. S. Cooper, in his *First Lines on Surgery*, states that "the cartilages in their natural state are sometimes ruptured." And this case fully bears out that opinion; for although I found a few points of ossific deposit on the cartilages, and these situated chiefly at their costal articulation, yet the places where the cartilages were fractured were quite translucent, and perfectly free from ossific matter.

"This case is also interesting in pointing out the great extent of injury which may take place to internal organs without any external indication; for though there was fracture of the sternum, and of the cartilages of three ribs on the right side, yet so little was the displacement, that the fracture was not discovered until the integuments were removed, though a careful examination was made previously. Also there was considerable extravasation of blood under the great pectoral muscle; yet the injury which caused this produced no marks of bruise on the corresponding integuments: perhaps the great outlet for the blood, (viz. the fissure in the vena cava,) and the short time that elapsed between the receipt of the injury and the death of the patient, might in some way account for this want of bruise."

ART. 97.—*Rupture of the Rectus Femoris.* Mr. G. S—, after running some distance from a sudden trip of the foot, fell to the ground. He heard a loud snap just above the knee-pan, and nearly fainted from the excessive pain. By soothing treatment he recovered from the severity of the injury. On examining the case six weeks afterwards, there was a very large swelling from the rectus femoris muscle, drawn one third up the thigh, and a corresponding depression above the patella. Walking caused great pain in the thigh. There was no tendency to approximation of the divided cords by an intervening ligamentous substance, and the surgeon (Mr. Grantham) was unable to effect any good by position or pressure. This gentleman remarks, that probably the rupture was

near the muscular bands, and if so, the case militates against a proposal which has been made to divide the tendon in the cure of talipes, near to the fleshy or muscular part.

*Facts and Observations in Medicine and Surgery.* By JOHN GRANTHAM, F.R.C.S.E.

ART. 98.—*Recovery from Severe Injury of the Chest.* Mr. Grantham gives a case of perfect recovery from the effects of a gunshot-wound in which the shot traversed the seventh rib, and caused a compound comminuted fracture, followed by the loss of seven inches of the bone. The cutaneous, subcutaneous, muscular, and ligamentous structures connected with the pleura costalis were lacerated, inflamed, and ulcerated, without any pectoral affection, and recovery took place, as the author believes, without any adhesion of the two surfaces of the pleura. The case is given in illustration of the amazing extent of protection afforded by the pleura to the lung, and of Bichat's principle that the serous membranes contribute to the independence of the vital powers and functions of different parts, by separating the respective organs.

*Lib. ed.*

## PART III.

### MIDWIFERY, AND THE DISEASES OF WOMEN AND CHILDREN.

**ART. 99.**—*On the Moral and Intellectual Requirements of the Obstetrical Practitioner.* By Dr. Beatty, Professor of Midwifery, Ireland.

(*Dublin Journal*, March 1845, p. 120.)

[ALTHOUGH the following remarks cannot be strictly called practical in the sense in which that word is generally employed, we think them so replete with sound and wholesome morality, as well as good feeling, that we gladly avail ourselves of them as a preface to our first retrospective labours in the department to which they refer. They form a portion of an address read before the Royal College of Surgeons of Ireland, and are reproduced with few exceptions in the exact words of the lecturer.]

“ Without going here into detail, let me call for attention to what is requisite for the practitioner in this branch of medicine. Passing by the intricate diseases of infancy and childhood, let us pause for a moment on that wide and difficult class of derangements of female health which commence with puberty. This is a season which properly calls forth the anxious solicitude of every mother; and it too often happens that neglect or mismanagement at this period lays the foundation of long enduring or permanent infirmity. Here it is that a judicious exercise of professional skill is required, and an acute or delicate tact is essential to discriminate between the diseases which may exist, and to administer the remedies appropriate to each; for in no class of cases is more mischief caused by following a routine practice than in that to which I have just alluded.

In a more advanced stage of female life, the practitioner of our art has to encounter a most formidable class of diseases, the organic affections of the womb. These are frequently rendered formidable by concealment in their early stages, arising out of the natural delicacy of the female character, and the repugnance they feel to disclose their sufferings. But in this case much may depend upon the previous character and conduct of the attendant. If by his skill and kindness on former occasions, he has gained the respect and confidence of the patient or her friends, she will communicate her ailments to him at a much earlier period than she would under other circumstances; and thus a disease may be discovered and checked at the commencement, which, if allowed to proceed, would assume a most dangerous form.

There is still another highly important, and often most difficult subject, upon which the accoucheur is required to be well informed, as questions of the highest moment arising out of it are frequently proposed to him, and upon his decision consequences of the most grave nature may depend. I allude to the subject of pregnancy,—one requiring a combination of learning, experience, and tact, in a higher degree than almost any other subject in medicine.

Such are some of the duties required of the practitioner in midwifery; let me call your attention to the qualifications essential to their due fulfilment. Anatomy and physiology, the grand foundation on which all medical knowledge is based, must be well and thoroughly understood; and the principles and practice of medicine and surgery must be deeply engrained on the mind. A liberal and comprehensive medical education is, therefore, the first essential qualification for

midwifery practice, and, without it, it is impossible for any man to rise to eminence.

Let us now suppose his term of study complete, is there any other qualification necessary to enable the student to become a practitioner, and to secure a share of public confidence? There are many. In the first place he must have a good moral character. Morality founded on religious principles before all other; but if unhappily such a regulator should not abide in him, then morality conformable to the strictest rules of society. In all branches of the profession, a failure in this particular is most detrimental; but in that to which we belong, a pure and unspotted character is the ingredient most essential to success. It matters not what amount of ability may be brought to the task; if it be not accompanied with strict moral rectitude, the door of public favor will be closed against them. Another very important ingredient is a good temper, or a steady control over a bad one. It is necessary to be aware that the private practice of midwifery, and the public practice of the same in an hospital, are two very different things. In the latter the patient is under the rules of the institution, and, from her position in society, is accustomed to obey her superiors. But when he comes to deal with his equals and superiors in rank, he will at times encounter characters which require the greatest skill and steadiness of temper to control and direct them, and he will find it necessary to exercise this quality as much in reference to the friends as to the patient herself. In addition to the quality just spoken of, the obstetric practitioner requires a very considerable share of moral courage. To any one who has attended a long and difficult first labour, it is unnecessary to recall the anxious looks, the importunate questions, the expressions of surprise amounting to disappointment and even displeasure, at the delay. But to those about to undertake this duty, I would strongly urge the necessity of coming furnished with a large store of moral courage, by means of which they will be enabled to pursue steadily the course pointed out by reason and learning, unmoved by the importunities of friends, or the exhibition of impatience by which they may be assailed. . . . I cannot more appropriately conclude this address, than by quoting the words of one of the greatest ornaments of our profession:—"Whoever aspires at eminence and respectability," says Dr. Burns, "must, by unremitting study, purchase that honour which he is solicitous to obtain. I know that it is the opinion of many, that success in the medical world depends more upon interest than abilities. But I will venture to affirm that he who trusts to this maxim, and neglects the means of improvement, will find himself most miserably mistaken.

"No man will trust his own life, or the safety of those whom he holds dear, to any man, however powerful may be his recommendations, if he once detects him to be a blockhead. In trifling ailments his ignorance may not be perceived, and years may glide on without any great impeachment of his character; but sooner or later difficult cases must occur, and his real character must be known. If a man of fortune, he may indeed still hold up his head, and assume the language of unconcern; but if his own subsistence or that of a family depend upon his employment, what will the consequence be? It is true that the generality of mankind are very incompetent judges of medical abilities; and therefore may, from accidental circumstances, raise a fool to some degree of honour; but notwithstanding his elevation, the fool still remains known only in the little sphere in which he moves, whilst the name of the learned spreads to distant lands. Even this success of the ignorant man must be only temporary. Some one better qualified than himself may come and pluck off his false laurels; some unfortunate case, sooner or later, must unmask his real character, and pitch him down to his proper station. But I shall say no more on the injury which by negligence a man may sustain in his character. I shall insist on a more important point; the life and safety of his patient. Need I remind him of those dangerous accidents which attend pregnancy and labour? Need I do more than mention those dreadful hemorrhages which are justly called floodings? Some of these may be stopped by easy means; but others require bolder operations. Can any man laying the most distant claim to humanity or honour, be easy when he is ignorant of these points? Can any one, not well acquainted with his profession, pretend to procure artificial

delivery? Will he presume to say upon his own judgment, when it is safe, and when it is not? Should he stop to deliberate, if the reasoning of such a man can be called deliberation, may not the woman die before his eyes? Can he without uneasiness attend the more lingering illness produced by the fruitless efforts of the uterus to pass the child through an ill-formed pelvis? Will he dare to determine upon his own authority when the crotchet should be employed? Must the child be wantonly sacrificed, because he, in his ignorance, believes it to be requisite? Or must the mother perish, because he foolishly hopes that assistance is still unnecessary? It is a very poor excuse to say that he had no malice in his heart. The laws of this country may acquit him, but his own conscience must tell him that he is a murderer. It was unwarrantable and criminal to undertake the practice of a profession for which he was not qualified. It will be surely unnecessary to point out the reverse of this character, or to mention the happiness which the well-educated man derives from his knowledge. By the operation of a single moment he restores life to the dying. In the midst of every danger he is courageous, because he knows his own power and resources. His life is spent with honour to himself and advantage to others; his departure is beheld with sincere grief by those who had the happiness of being connected with him."

*Address to the Dublin Obstetrical Society, by Dr. Beatty. Dublin Journal, March, p. 20.*

ART. 100.—*On the Exhibition of Chalybeates in Chlorosis.*

By M. RACIBORSKI.

(*American Journal of Med. Sciences*, Jan. 1845, p. 118.)

As it is a matter of considerable importance in the treatment of chlorotic or anemic conditions of the system to choose that preparation of iron which most readily enters into chemical union with the blood, M. Raciborski engaged the assistance of M. Quevenne, Pharmacien-en-chef to the Hospital of La Charité, to investigate the properties of the ordinary preparations of that metal. These are included under the following classification:—

- |                                    |   |                                   |
|------------------------------------|---|-----------------------------------|
| 1st division. Non-saline Compounds | { | Metallic iron,                    |
|                                    | " | protoxide.                        |
|                                    | " | peroxide.                         |
| 2d division. Saline Compounds      | { | Protoxides { with a mineral acid. |
|                                    |   | { with a vegetable acid.          |
|                                    | { | Peroxides { with a mineral acid.  |
|                                    |   | { with a vegetable acid.          |

Without enumerating the different preparations thus classed, it may be mentioned that those of the first division are rendered active only by meeting with an acid in the stomach; hence those are most valuable which are most readily attacked by weak acids; and among these none presents more advantages than metallic iron, prepared by passing a stream of hydrogen over an oxide of iron, inclosed in a tube, exposed to red heat; in which operation the hydrogen attracts the oxygen, and leaves the metallic iron in a state of extremely minute subdivision. M. Quevenne and Miguelard consider this preparation the very best.

*Review of M. Pouchet, Raciborski, &c.*

[In connexion with this subject, the following remarks by M. Selade may be thought interesting:—]

The best preparations of iron, considered in the light of a renovator of the blood, that is to say, a medicine capable of restoring to the globules the iron which is deficient, are the "chlorure" (proto-chlorate,) the carbonate, and the lactate. The acetate and citrate possess the same properties, but in a minor degree. The iodide of iron is superior to all these in rachitis and scrofula, especially in children, and in chlorosis complicated with the scrofulous diathesis. These diseases exhibit two morbid elements; the alteration of the fluids, and that of the solids, which is independent of the former. The medicinal treatment must be directed to both these elements at the

same time, which object is perfectly accomplished by the union of the iron and the iodine.

The virtues of the sulphate are more particularly shown as an external astringent application, as also in certain alterations of the gastric mucous membrane; but its action is simply local, and therefore differs from the above-mentioned preparations, which are energetic only in proportion to their absorption.

The peroxide and the hydrocyanate of iron are more efficacious than other forms of the metal in certain pathological conditions. For example, the former is not to be surpassed as an antidote in arsenical poisoning. The hydrocyanate is particularly useful in iodipathic epilepsy, acting in a special manner upon the nervous fibre. It is therefore necessary in all cases in which we are about to exhibit a ferruginous preparation, to choose that which is most suited to the pathological condition which it is intended to rectify.

*Memoire sur les Preparations Martiales. Archives de la Méd. Belge, Fev. 1845.*

**ART. 101.—On the Employment of the Juice of the Nettle (*Urtica Urens*) in Menorrhagia. By M. GINESTET.**

(*Encyclophie Médicale de M. Larigue, Oct. 1844.*)

The common lesser nettle is a very old remedy in various kinds of fluxes, but, like many other valuable indigenous plants, has fallen into unmerited disuse. The following case is an instance of its virtue in menorrhagia:—A maid-servant, *æt* 17, was attacked by a profuse sanguineous discharge per vaginam during the menstrual period. She was palsied and much reduced when seen by M. Ginestet. She was made to take 30 fluid drachms of the juice of the *Urtica Urens*, and in less than half an hour the hemorrhage, which had threatened her life, was completely suspended. Other cases are related by the author of the memoir, in which the success was equally decided. In order to prepare this juice, the plant, in any quantity, is bruised, with the addition of a small quantity of water, and strained through a linen bag. The dose is from 15 to 30 drachms. One dose is generally sufficient.

**ART. 102.—On Acute Ovaritis. By M. CHEREAU.\***

(*Journal des Connaissances Médicales, November, 1844.*)

The ovaries, according to the author of the memoir which we shall endeavour to condense, are liable to inflammation under three different circumstances;—

1st. Under the influence of the puerperal condition, which is the most common cause.

2d. Shortly before, or immediately after, the appearance of the menses.

3d. Under the influence of inflammation arising in, and extending from, the neighbouring parts, as the womb, rectum, pelvic fascia, &c.

These three species of ovaritis he designates under the titles of: 1st, *Essential or primary ovaritis*; 2d, *Puerperal ovaritis*; 3d, *Symptomatic ovaritis*.

After the details of cases illustrative of each of these forms, M. Chereau proceeds to the consideration of acute ovaritis under its different aspects:—

§ 1. *Abdominal lesions.* These occur in four degrees:—The *first* exhibit the organ slightly increased in volume, elastic, and shining; compression gives an indistinct sensation of fluctuation. Its tissue is more vascular than usual, especially in the neighbourhood of those Graafian vesicles which are on the point of maturation. The fallopian tube is sometimes also implicated, being vascular and situated more than usually near the ovarium. In the *second degree*, the size of the ovary is considerably augmented; a few days are sometimes sufficient to show it increased to three or four times its natural dimensions. At this time it

\* *Memoire pour servir à la Pathologie de l'Ovaire. Paris, 1844.*



also becomes the seat of a "red softening," by which the *stroma* is converted into a red friable matter, resembling the parenchyma of the spleen. In the *third* and *fourth degrees*, the softening first alluded to is more pronounced, and the organization of the ovary is more or less completely destroyed, the organ being converted into a diffuent sanious pulp.

§ II. *Etiology.* The causes of this disease may be surmised by the division which the author has seen fit to make. Thus labour, the puerperal state, the menstrual orgasm, affections of the womb, are all capable, under certain circumstances of giving rise to the complaint. The author has never seen it originate from external injury to the abdomen, believing that this more frequently gives rise to chronic affections, as cysts and tumours, than to acute inflammation. Ovaritis sometimes succeeds to vaginal hlenorrhagia, as has been observed by Ricord and Vidal de Cassis.

The left ovary is more frequently the seat of inflammation than the right. In forty-five cases in which the existence of the disease was clearly ascertained, it was situated twenty-five times in the left ovary, and eleven in the right. In four cases in both simultaneously.

The author explains this proclivity of the left ovary to disease, to its proximity to the rectum. The same opinion, which is also entertained by M. Tanchou, assumes the probability of truth from the fact that constipation is a frequent precursor of the inflammation, and we can readily conceive that the organ will be compressed and irritated by the impaction or passage of indurated feces.

Other causes of ovaritis are the rheumatic diathesis, strangulation of the organ in a hernial sac, uterine injections, cold during menstruation, and perhaps the pressure of the fœtus.

§ III. *Terminations.* Acute ovaritis may terminate in resolution, suppuration, "ramollissement," gangrene, and induration. The first is the more frequent, and should be the aim of all our treatment.

*Suppuration* is also a very common event, but not so much as is generally supposed. It is an error to imagine that because the ovary or fallopian tube contains purulent matter, that there has been ovaritis as a matter of course; for it frequently happens that hydatid cysts become inflamed, and in that condition often secrete pus. The manner in which ovarian abscess becomes evacuated is various; it either remains free, in which case the pus is poured out into the abdominal cavity, or the abscess contracts adhesions with the neighbouring parts, in which case it may find an exit by the rectum, bladder, fallopian tube, abdominal parietes, or even through the walls of the uterus itself. Of the first event two cases are reported by M. Montault. Andral has met with a case in which the abscess had burst into the bladder,\* as has also M. Murat.† Rupture into the vagina has been met with by Cruveilhier, Dance, and Husson. *Ramollissement.* This termination is mentioned by Ferguson,‡ Montault,§ and Cruveilhier|| who, however, doubts its dependence upon inflammation. *Gangrene* of the ovaries is alluded to in an especial essay by Sichen. Cases are also recorded by Murat, Seymour, and Velpeau.¶

§ IV. *Symptoms of Acute Ovaritis.* There are three principal symptoms, the presence of which indicate acute inflammation of the ovary. These are pain, increase of size, and the formation of a tumour. Occasionally the enlarged ovary may be perceived through the abdominal walls, but it oftentimes descends still deeper into the pelvic cavity, where it can only be ascertained by examination per vaginam or per anum. Having ascertained the existence of a tumour, we have next to determine its nature, and this can only be done where the rational signs of ovaritis are absent, by "exclusion."

\* *Precis d' Anatomie Pathologique*, t. 11, p. 704.

† *Dict. des Sciences Med.* t. 39, p. 17.

‡ *Essays on Important Diseases of Females.*

§ *Journal Heb. de Med.* t. 1, p. 419.

|| *Casus sphaceli ovariorum.* Upsal, 1768.

¶ *Répert. des Sciences Méd.* t. xxii, p. 574.

The maladies which are liable to be confounded with enlarged ovarium, are principally the following: phlegmonous abscess in the abdominal walls, abscess of the iliac fossa and peritonitis terminating in suppuration, and distension of the bowel by fecal matter. This latter is readily distinguished from ovaritis by emptying the intestinal canal, either by an injection or by purgative medicine. If, after this, scybala are not evacuated, or, being passed, the tumour still remains, it is clear that the case is not one of fecal accumulation.

Abscesses in the abdominal walls may be known by their being evidently situated without the abdominal cavity, and by the fact that the parietes do not slide freely over the tumour, but that the whole mass moves together. The diagnosis will of course be rendered more obscure when there is adhesion between the tumour and the neighbouring parts, but even in these cases, the disease may be satisfactorily determined by examination per vaginam or per rectum.

Ovaritis may be distinguished from psoas abscess by the comparative freedom with which the patient moves the thighs upon the abdomen.

There are also certain rational signs which will assist us in the recognition of acute ovaritis. These are, a pain below the pubis, between the womb and the iliac regions; the pain extends to the loins and down the thigh, and is either acute and lancinating, or dull and pulsative. The external genital organs are unnaturally hot, the vagina in particular; the os uteri is often painful upon the slightest pressure. There is often a continual desire to void the urine, the act of micturition being likewise painful. The same irritation extends also to the rectum.

§ v. *Prognosis in acute ovaritis.* When taken in time, inflammation of the ovarium generally ends in resolution; if neglected or mistaken, suppuration is likely to ensue, and, in some cases, even gangrene. Puerperal ovaritis is a far more dangerous disease than the idiopathic forms, especially when it is combined with metro-peritonitis, and is induced by atmospheric influences.

§ vi. *Treatment.* This in the onset must be antiphlogistic. As acute ovaritis is generally seen in plethoric females, bleeding by the arm is almost always advisable. This may be followed by the application of leeches either to the groin or to the labia; with fomentations, saline draughts, stimulating sediluvia, soothing injections, hip-baths, &c. Calomel may be given with great effect, but should be suspended as soon as the gums are tender.

If, in spite of these means, the inflammation does not subside, and suppuration appears inevitable, we cannot do better than abide by the judicious advice of Dr. Churchill:\*

"The aim of the physician in this case, should be to encourage the suppuration by means of cataplasms, constantly applied to the part.

"The formation of pus is sometimes indicated by a rigor, but more generally it cannot be discovered but by manual examination. The abscess should be opened as soon as discovered, in order to prevent its bursting spontaneously into more dangerous regions. If, however, it appears situated so high as to risk the effusion of pus into the peritoneal cavity, it is advisable to adopt a proceeding recommended by Dr. Graves in abscess of the liver, namely, to divide the parietes of the abdomen only in part, and then to apply fomentations till the matter bursts spontaneously through the artificial wound. When the matter is evacuated, the patient's strength should be supported by a nourishing diet."

#### ART. 103.—*Simple Ulceration of the Os Uteri.*

(*London and Edinburgh Monthly Journal*, June, 1845.)

The occurrence of simple ulcerations of the os uteri was denied by Boyer, owing, no doubt, to the little use made of the speculum in his day. Nothing, however, is more common than the appearance of these ulcers; and it may be said, that every woman, labouring under leucorrhœa, purulent or lactescent, is

\* *Dublin Journal of Medical Science*, Sept. 1843.

affected by this disease, if not with cancer. [!] Five or six varieties of this affection are at present under treatment in the wards of St. Louis, under M. Jobert, and these have all been carefully studied by means of the speculum. It is so rare in ordinary practice to have so many patients under the eye at one time, and so inconvenient, moreover, to examine them in a suitable manner, that the present opportunity of doing so is interesting. The disease, as far as regards the ulceration, presents itself under various forms; but they all proceed from the same cause—hypertrophy of the neck. This hypertrophy, without doubt, precedes the erosion, and is sometimes accompanied with induration, sometimes with softening. The hypertrophic softening is sometimes considerable; in this condition, it presents no morbid sensibility; the ulceration appears, no doubt, as a consequence to this state, and in the natural process of chronic inflammation. The ulcers may have their seat on one or other lip, sometimes on both; in some instances they cover the entire circumference of the os tincæ, and in others they are seated deep in the neck of the uterus, where they are concealed by the swelling of the anterior lip; but even here they may be discovered by a proceeding which we shall presently indicate: so much for the seat of the ulcers. As to their form, they are sometimes superficial: simple aphthæ, of the size of a lentil, having their seat on the edge of the neck, and more or less numerous, which is the most simple case; these aphthæ, however, not unfrequently extend, become confounded together, and constitute a superficial erosion of a mapped form, and more or less irregular; the lesion then becomes more serious. It is not necessary, however, that an ulcer should pass through the aphthous stage to arrive at this state, for it may originate at once in the inflammatory process alone. This species of ulceration presents a great resemblance to those large erosions of the superior part of the cornea, described by Velpeau, under the term "*Ulcères à coup d'ongle*"; it is, however, proportionably much larger. It may be compared more exactly to the surface of a suppurating blister; it is covered with granulations, bleeds easily, and is often infiltrated with blood; its aspect is therefore always red, but it is not painful to the touch. It is probable, that those women in whom there is hemorrhage after sexual intercourse, have some slight lesion of this kind.

In a third variety the erosion is no longer superficial, it is hollow, and sometimes very deep. Its base is more or less foul, its surface always of a bright red, and infiltrated with blood. The erosion then very much resembles the ulcers on the legs of varicose subjects, after they have taken exercise. This kind of ulcer often causes a notch on one side of the os uteri, generally on the superior lip. In some cases the ulcer attacks the whole circle of the internal surface of the os uteri, and hollows out a cavity from above downwards. These hollow erosions must always be regarded with suspicion, more especially if they make any progress in depth, for their nature is frequently not simple; and if they have originally been so, they are liable to assume a bad character. As a general rule an ulcer may be said to be simple when its surface is granular. In regard to form, the third variety resembles the preceding, it differs, however, in situation, being always in the neck. In conclusion, we have to repeat that there are three forms of ulcers of the os and cervix uteri; the aphthous, ulcerative abrasions, and the deep excavated ulcer; all, however, are more or less granular. Hollow ulcers which are not granular are suspicious.

Those affected with ulceration of the neck of the uterus are in general young, having seldom passed their thirtieth year; they have usually had a family or miscarriages, and have been for some time subject to abundant leucorrhœa and hemorrhages, or at least to fluxes of blood from the uterus other than the catamenial; their constitution is lymphatic; they are frequently dark women, of ardent feelings, with the pilous system highly developed.

The symptoms are of two kinds. On the one hand, an abundant leucorrhœa, with lactescent discharge; on the other, symptomatic phenomena peculiar to most other chronic uterine affections; viz., lassitude of the extremities, pain and dragging of the loins, want of appetite, and sometimes a painful contraction of the sphincter ani.

A precise diagnosis can only be obtained by means of the speculum; the

"toucher" alone is insufficient; by its means a state of hypertrophy can merely be ascertained, and that not with much certainty. In order to institute a thorough examination with the speculum, the patient must be placed, not on the edge of the bed, as is generally done, but on a table, with the hips very much raised, and the thighs bent backwards, so that the knees almost touch the abdomen. It is then only by a strong ray of natural light that the fundus of the vagina can be distinctly seen. In order to examine the whole periphery of the neck, a double-valved speculum ought to be used, the cylindrical instrument does not embrace a sufficient portion of the hypertrophied cervix. At first there is observed on the uterus and fundus of the vagina a quantity of purulent mucus; on removing this, the disease becomes visible, the first thing that strikes the eye is hypertrophy of one or other lip, or of the whole os, and then the ulceration with which it is complicated.

As to treatment, nothing is more simple or certain. The disease is invariably cured in the course of a few months, by the means employed at St. Louis. Two lesions have to be considered, the one depending upon the other, viz., ulceration and hypertrophy. If these be merely aphthous ulcerations, slight cauterization with the acid nitrate of mercury, or even with the nitrate of silver, speedily produces cicatrization; the remaining hypertrophy, if it is not considerable, may be cured by the ordinary means. If the hypertrophy exist to a great degree, the actual cautery is used from the commencement. The same remedy is used for the third species of ulcer, so as to produce an eschar more or less deep. The cure is generally accomplished in from two to four months, but a sensible amelioration in regard to the pain and leucorrhœa is perceptible during the first week. It seems probable that concentrated heat causes such a modification of the diseased tissues, as to dispose them to the healing process. We earnestly entreat attention to the above facts; the disease is both frequent and disastrous among all classes, and especially in large towns.

*Annales de Thérapeutique, Avril, 1845.*

#### ART. 104.—*Extirpation of the Uterus.* By M. MOLLET.

*(Annales de Thérapeutique, Jan. 1845.)*

The subject of this operation was a woman of feeble constitution, æt. 47, mother of three children, who had experienced obscure pains in the uterus for the first time in 1831. The case was supposed at this time to be one of incipient polypus. At the end of 1843 bloody discharges occurred at short intervals, and in the course of the next year became more frequent and abundant. Her general health becoming much impaired she placed herself under the care of M. Mollet.

On the 25th of October the patient suddenly perceived something pass per vaginam, which upon examination proved to be the uterus, completely inverted. (?)

It now became a question, what proceeding was to be adopted? Reduction was impossible; therefore the only chance for the patient was either to leave the disease to nature, or to remove it by operation. In the former case, everything was to be feared from the prolonged contact of the air, urine, &c. In the other, a considerable risk had, no doubt, to be encountered; but facts are not wanting to attest the possibility of success. As the patient became daily more and more exhausted, and ulceration with fetid discharge had commenced, the operation was at length decided upon, and performed in the following manner:—

At the time of the operation, 11 A. M., the patient was in the following state:—pulse small and feeble; skin soft, without coldness. The tumor was of a grayish white colour, seven inches in length, three and a half in breadth. On the hypothesis that the case was one of total inversion of the uterus, it was agreed that as several important parts, such as the fallopian tubes, ovaries, fundus of the bladder, &c., might be dragged within the concavity of the organ, that an exploratory incision should be made, in order to ascertain what parts had become involved in the misplacement. This was done, after certain precautions had been taken to prevent serious hemorrhage. The bistoury plunged into a somewhat lardaceous tissue; but as no cavity was displayed, it became evident either that the tumour was not the uterus at all, or that that organ had been totally converted into scirrhous.

Under these circumstances, it was considered safe to amputate at once by a circular incision. In this manner, the whole of the diseased parts were removed without hemorrhage, the operation lasting only thirteen minutes.

On examination of the parts, it was discovered that the diagnosis had been erroneous; that the uterus was not inverted, as was supposed, but merely dragged downwards by an enormous polypus, which had developed itself on the os tincæ. The patient died on the fifth day. [Appended to this case are some valuable practical remarks on the diagnosis of uterine polypi, which, as they in some cases are sufficiently doubtful to mislead even the most experienced practitioners, we shall extract for the benefit of our readers :]—

“In polypi arising from the interior of the uterus, and projecting into the vaginal cavity, the stalk of the tumour is always found more or less encircled by the lips of the dilated os and cervix of the organ; the tracing, therefore, with the finger this circle of the cervix round the pedicle of the polypus, forms the most important diagnostic mark in such forms of the disease.

“When however the polypus arises from the edge of the os uteri, or from the vaginal surface of the cervix, the above important diagnostic mark is wanting, and the case in consequence becomes one, the nature of which is often very difficult to determine. This difficulty of diagnosis does not merely depend upon our not finding the pedicle of the tumour encircled, as is usual in other forms of uterine polypi, but also from the still more fallacious circumstance, that the os uteri, though traceable in the stalk of the tumour, is generally so displaced in situation, and altered in form, as to render its identity doubtful. The difficulties attending the diagnosis of those forms of polypus to which these remarks refer, would in most cases be perfectly removed, if we could assure ourselves that the body of the uterus itself was of the natural size, and in its natural position, and that the imperfect cleft that may be traceable on the inside of the tumour was in reality the os uteri. If these points could be fixed with certainty, the attachment and nature of the tumour would at once become evident, the question of the propriety of its removal would be resolved, and the exact point of its removal more safely and certainly determined than otherwise could be. These important points in diagnosis we would in future propose to fix, by introducing the uterine sound into the cavity of the organ, so as to determine the real situation of the os, and the position and state of the uterus itself, as ascertained by the direction and length of its cavity. The introduction of the instrument in particular cases will require unusual care and patience, in order to pass it through the displaced and altered uterine orifice. But the clear information afforded by the examination in a set of cases which are often so perplexing in their character will amply repay the mastering of any such difficulties as I have presupposed in the employment of the means.”

*London and Edinburgh Monthly Jour.* April 1845.

**ART. 105.—*The Inverted Uterus successfully removed by Ligature.***

By Dr. M'CLINTOCK, Assistant Physician to the Dublin Lying-in Hospital.

(*Dublin Journal*, March 1845, p. 48.)

The subject of this case was admitted into the hospital on the 30th of August, 1844, æt. 24. As far as could be ascertained she had been the subject of difficult labour with pretermatural presentation, and the attendant had made use of force in extracting the child and placenta. The following morning a tumour made its appearance at the os externum, which was soon replaced; the tumour, however, prolapsed several times subsequently. She then became subject to profuse hemorrhagic losses by which she was much reduced.

Upon examination per vaginam a globular tumour was readily felt, round which the finger could be freely carried, and encircling the upper portion; the os uteri was plainly perceptible. On the 18th September Dr. Johnson applied a ligature of strong fishing-line around the neck of the tumour by means of Gooch's canula; after it was tightened she complained of some pain in the back. On the evening of the next day it was necessary to relax the ligature, in conse-

quence of continued nausea and pain in the belly. To relieve the more urgent symptoms of pain and loss of rest, it became necessary to administer opiates. Within the first two or three days the catheter was also required.

On the 18th day after the application of the ligature it was found that the neck of the tumour was more than half divided, and on the 28th day Dr. Johnson completed the separation by incision. From this time the patient went on satisfactorily in every respect, and was in perfect health six weeks afterwards.

**ART. 106.—Case of successful Extirpation of a Fibrous Tumour of the Peritoneal Surface of the Uterus by the large Peritoneal Section.**

By WASHINGTON L. ATLEE, M. D., Professor of Chemistry, Philadelphia.

(*American Journal of the Med. Sciences*, April 1845.)

June 1844.—Dr. Atlee was consulted by Miss L. P. and received from her the following history of her case:—

In the spring of 1843, she began to have frequent desires to urinate, but her attention was not particularly drawn to the circumstance until the 15th of October 1843, when she felt, for the first time, a tumour in the right groin, about the size of a pullet's egg. About two weeks previous to this, she had been thrown from a horse, from which accident she suffered very much in her right groin, side, and hip, and was confined to the house for several days. At this time she is not able to ride more than a mile without stopping to pass water, and she rises once or twice, sometimes oftener, during the night, for the same purpose. She is in the habit of drinking very little in the evening, in order to prevent much disturbance from this cause at night. There has been no difficulty in the process of defecation, but she has been somewhat troubled with constipation, which she relieves with a simple soda powder or a pinch of salts. Her menstruation has always been regular but painful. It, however, has latterly diminished in quantity, is sometimes clotted, and is followed for a short time by fluor albus. Twice last winter she was seized with pain in the tumour, and down the thighs, lasting about half an hour and so excruciating as to almost produce fainting. She felt confident that the tumour was coming away at that time, as she believed it to be in the womb.

She is 24 years of age, rather over the medium height, has always enjoyed excellent health, excepting while undergoing medical treatment for the tumour. Her constitution is good, the digestive functions go on well, there is no other local disease, and her muscular and osseous systems are well developed.

I examined the patient and found a tumour occupying the hypogastric and right iliac regions, resting closely upon the pubic bones, being prominent above the symphysis, and gradually retreating toward the spine as the hand ascended towards the umbilicus; the fundus was hard, resisting, somewhat uneven, and presented an edge in the right iliac region. The only tender spot on handling was on its upper surface. It was moveable, and could be pushed upon the brim of the pelvis over to the left iliac region.

In examining per vaginam, the finger, as soon as it entered, came against the convex surface of a hard tumour, immediately below and behind the arch of the pubis, and resting firmly against it. This rounded surface extended throughout the pelvis, pressing the uterus down against the perineum and rectum so firmly that it required some slight force to insinuate the finger between them. Upon the interior face of this tumour was a ridge about the thickness of a finger, occupying a central position, and running in the antero-posterior direction, which evidently was the cervix uteri, the os tincæ being plainly perceptible in its anterior end—the neck of the uterus appearing to lay between the tumour and the perineum, horizontally upon the latter. On carrying the finger around towards the left side, it fell into a sulcus apparently between two tumours, but which I supposed was caused by the inferior one being the flattened fundus of the uterus occupying that position, and the upper one being an enlarged ovarium. The fundus of the uterus was more evident upon the left than on the right side, and

its neck and body appeared to have been moved upon the tumour. The uterus, while the tumour was in situ, was pretty firmly fixed in its position, and did not appear to have been altered in its texture or size, nor was it painful on handling. I now attempted to raise the tumour out of the pelvis, but it required considerable and continued force before I could effect it. I however raised it sufficiently high to get partially beneath it at the pubic region, and to sustain it while I continued the vaginal examination. The uterus now took its natural position more nearly, became moveable, and the finger could be passed between it and the tumour, so as clearly to show that the tumour was distinct from the uterus. Motion of the one did not affect the other, and both could be moved independently of the other. This part of the examination was most carefully conducted so as to leave no doubt resting on the mind. There was very little sensibility of the pelvic viscera, and of the tumour, in that region. When pressure, however, was made on the anterior part of the tumour in the vagina, it produced a desire to pass water. The bladder occupied this position, and could be distinctly felt.

By the examination per rectum, the tumour could not be felt immediately upon introducing the finger, but after passing it up a short distance it came against a solid convex tumour, which appeared to rest firmly against the sacrum. Beneath this tumour, and lying against the anterior wall of the rectum, the fundus or the uterus could be felt, and when the tumour was elevated, the finger could be passed between the two, and in this position also both were moveable independently of each other.

In a standing position, which caused the pelvic viscera to descend more against the perineum, the bladder, which contained a little water, was pressed below the tumour, and could be felt like a small purse resting against the posterior face of the pubis, with the tumour above and behind it.

The patient having called upon me with the expectation that a surgical operation was the only chance for relief, we sent her home without expressing an opinion in reference to an operation, and desired her to return in about one month to have the examination repeated. In the meantime she was to omit medical treatment, and live as if in the enjoyment of good health. I informed her, however, that there was no doubt of the existence of ovarian disease, and that a subsequent examination would most probably clear up any doubts I might have of the propriety of attempting its removal. Until her next visit she was requested to keep a diary of the state of her health.

My patient returned to Lancaster on the 7th. She had suffered during the interval at times from pain in the tumour and back. She had menstruated on the 19th, the discharge being profuse and attended with much pain. Another examination was instituted more extensively than previously. After surveying the tumour per vaginam et anum, I introduced a sound into the bladder, but instead of passing up anteriorly to the tumour, it kept beneath it, going back horizontally and parallel to the perineum, so that it could be swept from side to side over the inferior convex surface of the tumour, showing that the bladder was beneath it, and that it was impossible for this organ to be lifted by distension above the pubis, being resisted by the weight of the tumour. I also at the same time endeavored to pass a sound into the os tincæ, but finding it would not readily enter, I desisted. It was very evident, however, in this examination, that the upper part of the tumour occupied the right groin, the posterior part rested on the promontory of the sacrum, and its anterior portion on the symphysis pubis, and its inferior portion dipped deeply into the pelvis, so as to press down the pelvic viscera against the perineum. The tumour had increased in size, was rather more moveable, and in our opinion free from adhesions. As far as we were able to judge, through the thick undistended walls of the abdomen, and the simultaneous examination *per vias naturales*, we were of opinion that the pedicle might be an inch or over in length.

From the period of the first examination she was much less troubled with her water, the elevation of the tumour out of the pelvis at that time appearing to have relieved her, by removing its pressure from the bladder. This relief was permanent.

After viewing the case in all its aspects, I considered it one suitable for operation. This opinion was announced to the patient, the dangers and chances of the operation fairly stated in the presence of her sister-in-law, and the matter left wholly to her own decision.

Her father called on me on the 19th of August, with the intelligence that his daughter, after deliberating well upon all I had told her, had concluded to have the operation performed. He stated that she had come to that determination herself, without any influence whatever; that her mind was well prepared for any event, and that since she had settled the question for herself she was quite cheerful, happy, and in better health.

She had menstruated on the 16th, and had passed a considerable quantity of coagulated blood.

August 26th. Miss P. arrived in town. We examined her again the same evening, and found much the same state of things as before, excepting that the tumour had been getting larger. Her health was good, pulse 90, and she seemed in good spirits.

August 28th. After suitable preparation, the thermometer in the bed-room being 73 F., I commenced the operation at 11 o'clock, in the presence of Doctors Humes, F. A. Muhlenberg, Rohrer, Whiteside, Parry, and Cox, and Messrs. Richards, Mellinger, Miller, Dare, Kerfoot, Hershey, and Franklin; my brother, Dr. John Atlee, being my principal assistant, and Mrs. P., her sister-in-law, her female friend. I made a bold and free incision, about eight inches long, from the umbilicus to the pubis, on a line with the linea alba, cutting through the skin, a thick layer of adipose tissue, and the sheath of the recti muscles, until I exposed the peritoneum, between which I could see the folds of the intestines. Now pinching up the peritoneum carefully between my thumb and finger, I nipped it open with a scalpel. Through this opening I passed a grooved director, and with a curved, probe-pointed bistoury, I slit open this membrane, above and below, to the extent of the outer wound. As soon as an opening was made into the peritoneum, most of the small intestines, several inches of the transverse colon, and a portion of the omentum gushed out, and gave us a great deal of trouble during all the subsequent stages of the operation. The bowels were of a reddish brown cast, tolerably vascular, and considerably distended with wind. There also issued from the cavity of the abdomen about four ounces of thin transparent serum. My brother now took the charge of the bowels, but found it very difficult to keep them out of the way. Indeed, it was utterly impossible to keep them within the abdominal cavity, and all that could be done was to hold them to one side while the operation progressed. The tumour was found occupying the right side, and dipping deeply into the pelvis, and upon passing an index finger of each hand on each side of the tumour, until I got them rather under it, I was enabled, by using considerable force, to elevate it from its bed, and slip it out of the opening, which was merely large enough to permit its escape. Although the tumour was now entirely dislocated, it was still firmly held down by its attachment, so as to block up the wound; and this, with the mass of intestines lying out, so obstructed the cavity, as to render it extremely difficult to survey the pelvis. I however insinuated my finger alongside of the tumour into the opening, and the first thing I encountered was an immense pedicle, running from the tumour to the right side of the uterus, and about one inch and a half in length. This for a moment startled me. In order to examine the state of things, and that we might decide upon the propriety of severing so thick an attachment, I seized the tumour and made gradual but firm traction, so as to elevate it and the adhering uterus to view. This was accompanied with some manifestations of pain, great distress in the back, violent neuralgia of the thighs, and considerable gastric disturbance. The tumour now being sustained by an assistant, the pedicle was found to be a very dense, thick, solid, vascular mass, about two inches in diameter, in a perpendicular direction, and one and a half inches thick in the antero-posterior diameter, rather diminishing as it approximated the uterus. It was determined to cut it; and I accordingly transixed the pedicle close to the uterus, with a needle doubly armed with a three-stranded silk ligature, well waxed. The needle now



being cut out, two ligatures now remained, in order that each might embrace half of the pedicle. In tying the anterior ligature, however, the resisting elastic pedicle relaxed the first knot, and thus taught us that too much care could not be observed in this part of the operation. I therefore employed additional and continued force upon the strands, and one of them snapped. I replaced it immediately with the other ligature; and having drawn the first knot very tightly, an assistant kept it from yielding, by pressing firmly upon it with the point of his finger, until I had it perfectly secured. Another needle, similarly armed, was passed through the pedicle, near the same place, so as to include a small segment of the circle of the first ligature. The half of this ligature was secured in the same way on the posterior portion of the pedicle, while the two ends of the other half were permitted to hang out of the wound, the pedicle being suspended in its loop, to serve us in raising up the severed pedicle in case of hemorrhage. In transfixing the pedicle, the greatest care was requisite to prevent the bowels being wounded by the point of the needle. I therefore adopted the precaution of passing my left index-finger down behind the pedicle, and receiving the needle's point upon it; I kept it thus shielded until it was drawn out beyond danger. In order to make things doubly secure, a four-stranded ligature was thrown around the whole pedicle, midway between its transfixed position and the tumour, and tied first with a single knot, which was kept from slipping by grasping it in the fingers, and then again made to encircle the pedicle, and carefully secured. The pedicle was now severed close to the tumour. At this instant a gush of blood took place from the cut surface, but it being black our apprehensions were soon allayed—it was the strangulated circulation of the tumour amounting to from two to four ounces, and was the only hemorrhage that occurred. The tumour being removed, the cut surface of the pedicle was examined, and although innumerable vessels with open mouths showed themselves like the pores of a sponge, we were rejoiced to see that not a single drop of blood escaped. The great mass of intestines which were out, and occupying the whole wound, prevented us from seeing into the cavity of the pelvis. Besides, the pelvis was usually deep. I made, however, a careful survey of it with my finger, and considered the uterus and left ovary perfectly healthy in every respect. I also felt the fundus of the bladder, which appeared to contain a small quantity of fluid. After removing the coagulated blood, and clearing the surfaces with a small sponge, we endeavored to replace the bowels, but could not succeed, the cavity being apparently too small to receive them. I at length transfixed the two lips of the wound at the centre with a sewing needle and secured them with a twisted suture. Then every inch from that point upwards I applied a similar suture, retaining the intestines and omentum carefully at each point of application, until the upper half was thus secured. My brother supported with the palms of his hands the intestines that remained out of the inferior part of the wound. Just at the time of completing the upper portion of the wound, violent efforts at vomiting supervened, the diaphragm and abdominal muscles acted powerfully, producing a great expulsive force in the abdomen, and caused the bowels to burst out between my brother's fingers while endeavouring to restrain them, and also forced the upper part of the wound into a prominent ridge, with a gaping between each of the needles, through which interspaces we expected every moment to see the bowels rush. A portion of the omentum did escape at the upper part of the wound. During this exciting time I supported the closed part of the wound with my hand, and called for twenty drops of elixir of opium, which soon calmed down the stomach, so that we could proceed in the dressing. In consequence of these efforts producing such a strain upon the wound, I gave it additional security by introducing a hair-lip suture between every two needles already employed. The lower part of the wound was secured at half-inch distances by the same kind of suture, and the intestines gradually pressed in as we progressed downward, until the whole wound was perfectly secured by fifteen twisted sutures, and so firmly that it would resist the most powerful expulsive efforts that could arise. Considerable care was required in passing the needles through the lips of the wound, to prevent their points becoming entangled in the folds of the intestines and wounding them. The liga-

tares came out at the lowest point of the incision, and were secured to the abdomen by a strip of adhesive plaster. Adhesive plaster was also laid under the ends of the needles to shield the skin. A fold of patent lint, a compress, and a towel bandage, completed the dressings, after which the patient was lifted from the table into bed, and ordered occasionally a couple of teaspoonsful of cold water.

The operation lasted nineteen minutes and a half from the time the knife was laid upon the abdomen until the tumour was taken away; a large portion of the time being consumed in deciding upon the propriety of cutting the pedicle. The wound was dressed, and the patient laid in bed before twelve o'clock. She bore the operation with remarkable fortitude, complaining only when the tumour was dragged up from the pelvis, and at other times giving an occasional moan.

[The operation was not followed by any untoward event of consequence, occasional vomiting, with a variable state of pulse, being the most marked symptoms. In about three weeks from the day of operation, the patient was so far well as to be allowed to return home.]

*Description of the Tumour.* The tumour weighed 1 pound 13 ounces; its several circumferences were 1 foot  $7\frac{1}{4}$  inches, 1 foot  $6\frac{1}{4}$  inches, and  $11\frac{1}{4}$  inches. The cut surface from which the pedicle was detached, is  $2\frac{1}{4}$  inches and  $1\frac{1}{2}$  inches in diameter, and 6 inches in circumference. The tumour is very dense and solid. In cutting it, the knife feels as if going through sole leather; it partakes, in a very slight degree, of the crackling feel of scirrhus. I split the tumour through the centre—it has a beautifully variegated, flesh coloured, appearance; its cut surface is studded over with stellated points, the radii formed of alternate whitish and flesh-coloured lines, which also run in other directions, and intermingle with each other under various forms. Small orifices can be seen opening on to these cut surfaces, and must be vessels cut across in making the section. The tumour is invested with two distinctly marked tunics—the peritoneal and proper coat; both very closely united, and both dense. The proper coat is less closely united to the surface of the tumour, than to the peritoneal coat. At two or three places, these two coats are separated in patches about the size of a finger-nail, and looked like emptied blisters. The tumour is undulated over its whole surface, has a pinkish white colour, and in its external aspect has all the characters of some specimens of encephaloid degeneration that I have seen. Large vessels can be traced ramifying under its coats, and concentrating towards the site of the pedicle, and terminating with open mouths upon its cut surface; one of these vessels is as large as a common goose quill. The tumour is of a uniform structure, no part having softened down. I think it may be denominated fibrous, or fibro-cartilaginous.

*Remarks.* The above case, in my opinion, is one that goes far in testing the propriety of gastrotomy. The cavity of the abdomen was laid open to the distance of 8 inches, and exposed nearly half an hour under very unfavorable circumstances. The great mass of the small intestine, a large portion of the colon, and a part of the omentum, were forcibly and suddenly ejected, and exposed to a temperature, during all this time, of at least  $25^{\circ}$  below their natural heat; they were subjected also to constant handling, in opposing their unceasing tendency to be forced out,—occasionally by the most powerful expulsive efforts,—and in continually folding or turning them out of the way; and to considerable pressure and unusual force in replacing them. To this succeeded the repeated riding of the viscera for several days against the ligatures and wound, in the strainings to vomit. This was a state of things calculated to produce the most intense and fatal form of inflammation; for it must be evident, that peritonitis of the viscera is necessarily more mortal than that of any other form, and that that which supervenes in consequence of omental or parietal attachments, where there has been no exposure or handling of the bowels, is much more innocent and controllable. In Miss P.'s case, therefore, peritonitis of the most violent and obstinate grade, was to be apprehended. This did occur, but it yielded to active antiphlogistic means as readily as idiopathic inflammation. In the treatment of this case, however, we were convinced of the necessity of having our patient

under our immediate charge, as death most probably would have occurred from inflammatory action, had it not been promptly and decidedly met.

Another cause, favouring the successful result in this case, was the difficulty of access to the pedicle, and the continued traction necessary to bring it into view. This gave the most pain in the operation. It was not until the uterus was dislocated, and considerably raised, that the thick, short, and dense pedicle was brought in sight, and this was transfixed and tied closely to the uterus, a circumstance likely to excite metritis. This, however, did not occur, as the several vaginal examinations satisfactorily proved.

Yet notwithstanding all these unfavourable circumstances, my patient is a living record of the propriety of the operation, and her recovery a strong argument towards establishing it in the minds of the profession.

It might be said that my patient was not yet driven to the necessity of an operation, and that she might have lived a considerable time in comparative health and comfort. But I would ask, has not the great error in this long decried operation been to wait too long? Has it not been performed in cases where the vital functions have been so deranged that death would have been the inevitable result of any great change or sudden impression on the system? Look for instance at Dr. Chrysmar's last case, Mr. West's third case, Mr. Phillip's, Mr. Greenhow's, and Mr. B. Cooper's cases. Has it not been deferred until such extensive adhesions have been formed with important organs, and until the mere size of the tumour has so deranged and impeded the most essential functions, that expectation of recovery was almost out of the question? (See Chrysmar's third case, and Clay's sixth, tenth, and twelfth cases.) Has it not been deferred until the disease has progressed and implicated adjacent organs, whose extirpation is almost necessarily fatal, and where the surgeon ought to have closed the wound without completing the operation? (I allude to Clay's fifth and fourteenth cases, and to Mr. Heath's case.) And ought it not to be a matter of surprise that, among the cases upon record, so many have terminated successfully in spite of the most unfavourable circumstances? (Take for example Dr. Roger's case, Clay's third and thirteenth cases, and my brother's first case.) If an earlier period for gastrotomy were selected, before the health had given way, when none of the important functions had been impaired, is it not likely that the proportion of the recoveries would be much greater than the present ratio? The mere wounding of the peritoneum and exposure of the peritoneal cavity cannot alone constitute the danger in this operation. This is seen in the thousand accidents to the cavity; in the timely operations for hernia; in paracentesis abdominis; in the no tumour peritoneal sections of Messrs. King, and Dulhoff, and in the unfinished cases of ovariectomy of Messrs. Galenzowski, McDowel, Smith, Lizars, Granville, Dieffenbach, and Walne, where the very circumstances which led to the operation were calculated to give a fatal preponderance to such exposure. If then this membrane can be torn, punctured, cut, and its cavity exposed in so many ways with comparative impunity, why wait until these tumours acquire the bulk of ten to seventy pounds or more, before attempting their extirpation? Why wait until the tone of almost every organ in the body is impaired by pressure or congestion, when the wheels of life are literally clogged, or when death would necessarily result from any other capital operation? Why wait until the pathological condition of that very membrane, which has been a spectre to so many, is past recovery? I therefore repeat the question, is it not surprising that success should attend in any case, as it has in several of such extent? But let this operation be performed under the same circumstances that are selected for other operations, when the system is in its best condition, and before health has been invaded by the disease, and I feel confident that its legitimacy will be established in the minds of the profession.

Besides it is admitted on every side that these diseases are beyond the reach of medicinal agents. "They seem to be removed so far from the general sympathies of the system; so insulated in position; so independent in function; that the common agents for the removal or control of disease seem to waste themselves in unavailing attempts to influence their actions, or to modify their affec-

tions. Who flatters himself that he has removed a dropsy, resolved a scirrhus, or interrupted a suppuration in these bodies? We believe, if he be candid, none will declare he has. Little more, then, is ascertained at present, than that these parts are very liable to disease, and but very little susceptible of cure. Unfortunately, they have much more frequently furnished subjects for the anatomist's knife than triumphs to the physician's skill." (Dewes.) "There is little prospect before a patient afflicted with this disease but long continued annoyance, more or less suffering, and, sooner or later, broken health, a shattered constitution, and death." (Churchill.) It is needless to multiply authorities; no fact is more generally admitted. If, then, medicine will not reach it in any of its stages, and surgery be not only the dernier but the only resource, why delay resorting to the latter until a period when an operation of magnitude, of any kind, would be condemned? The opinion of Hunter, too, so often quoted by our opponents, that the less done for it the better, strongly sustains our argument; and was clearly given only in reference to its medicinal treatment and tapping. This opinion is corroborated by the testimony of the whole profession, and by the case of Miss P., whose general health suffered most whilst under medical treatment.

With this view of the matter, I cannot regard the present list of operations, numerically considered, as a fair test for the propriety of surgical treatment, as in many cases the knife was resorted to when death was staring the patient in the face; and consequently, I cannot consider the ratio of mortality as fairly established. I would not wish, however, to be understood as urging extirpation at an early period, when the disease is stationary and inactive, and at the same time independent of serious symptoms; but delays are dangerous under opposite circumstances.

According to the diagnosis the case was considered ovarian tumour; and during the excitement of the operation, a doubt of the correctness of this opinion did not arise. A close examination of the tumour afterwards, and a calm review of all the circumstances, led me to question the existence of ovarian disease: the peculiar form of the pedicle—its vascular, fleshy, and resisting structure, entirely free from any fold of the hyoid ligament, free from any evidence of the Fallopian tube, and having an almost sessile union with the uterus; the uniform and fibrous structure of the tumour,—no fimbriae or disintegrated ovary traceable within it, while the latter could not have become assimilated in structure, the disease not being malignant, the investment of the tumour being perfectly smooth, and free from folds or shreds of membrane, and the tumour located upon the uterus as if stuck there—all inclined me to doubt its ovarian character, and to consider it a fibrous tumour of the uterus. This opinion has been fully corroborated by my brother's unfortunate case, as will be seen by referring to his report. I am aware, however, that Bayle says, that the development of fibrous tumours of the uterus has not been noticed before the 30th year, although Ingleby thinks he has detected the disease in girls under the age of 20. I am also aware that authors, in treating of fibrous tumours of the uterus, generally speak of them as occurring within its cavity; and that cases are reported of scirrhus, cartilaginous, and fibrous tumours of the ovary having been extirpated, and also of having been met with in examinations after death.

The extension of gastrotomy to fibrous tumours of the uterus may perhaps be condemned. This case might have been reported one of ovarian tumour, if I had not preferred to relate things as they are. I pledge myself to the profession to treat this subject in all truth and candor, to falsify, omit, or withhold nothing, and to write down errors, if such there be, in honesty and without fear—taking censure when deserved. In the decision of a matter of such weight to humanity, personal sacrifices ought to be utterly disregarded. If this operation is to be established, it must be on *correct* statements; if it fail on such testimony, it fails justly and forever. But if its establishment be attempted on falsified reports and withheld facts, then human life must fall a sacrifice to personal and professional dishonesty, and the effort must necessarily die, covered with a mantle of human gore. Let the question be therefore met as it ought to be, and its history be a record of truth. I have acknowledged that the case was considered an enlarge-

ment of the right ovary, and this is the reason why I examined only the uterus and left ovary before closing the wound, believing the right one to have been extirpated. Proving to be a case of fibrous tumour of the uterus, it did not lessen the dangers of extirpation, as the same parts were involved, and the risks to the uterus and of hemorrhage increased. This, therefore, was an error of diagnosis. Should such errors of diagnosis as occurred in this case, militate against the operation? I think not. For whether it be the right or the left ovary, or whether it be an ovary or uterine tumour, provided the case can be clearly diagnosed as fit for gastrotomy as this case was, it could not affect the result. And the result is the great object after all. For should we start out to extirpate the right ovary, and end by cutting off the left, or instead of amputating either, we excise a uterine tumour, it in no material way varies or magnifies the operation, nor affects the result. This case, therefore, may be of essential service, by proving that ovariectomy is not the only form of gastrotomy worthy of consideration, and calls in question the position assumed by British writers; that the impossibility of knowing exactly beforehand the *exact* condition of the organs which it is proposed to extirpate, forms one of the strongest arguments against the operation. Fibrous tumours, growing from the peritoneal surface of the uterus, sometimes reach to an enormous size, and from their solid character, are likely to impede the functions of adjacent organs more than an ovarian cyst. Indeed, death has even been produced by injuries to the viscera, interposed between the enlargement and the parietes of the abdomen. The same circumstances, likewise, calling for extirpation of the ovaries, obtain here, and the removal of such tumours must be equally legitimate.

To the advocates of gastrotomy it is gratifying to observe, that this operation is gaining ground in the estimation of British surgeons, notwithstanding some of their reviewers have condemned it without measure.

The question of preference in regard to the kind of section, minor or major, is still under discussion, but according to the statistics, the ratio of mortality is least in the former. In addition to the arguments in favor of the large section, there is one light, however, in which this matter appears not to have been viewed, and which, necessarily having an important bearing upon this question, must be an element in the calculation, which will prevent its definite decision. In all minor sections, the tumour must be cystiform and free from adhesions—a state of things most favorable for either operation. In solid tumours, or adhering cysts, the minor section must give way to the major operation—a state of things more unfavorable for success. Those very cases, where the weight and pressure of a solid tumour have been impeding the functions of the viscera; where adhesions indicate pre-existing disorganization of parts, and an injurious check upon their normal mobility; where the operation is necessarily accompanied by much more violence; where there are many more points of irritation by ligatures and where more extensive changes in the relative position and condition of the abdominal and pelvic organs follow—are those in which, apart from the mere size of the wound, the worst results would be anticipated, and in which too, the large section only would be employed. I see no way, therefore, in arriving at any accurate results, as the circumstances so greatly differ, nor can I conceive the use of attempting its decision, when the condition of things must govern in the case after all. I can see no particular reason why the minor operation should be preferred to the major; and until we become more familiar with all the shades of diagnosis, so as to clear up all doubts about adhesions and the character of the tumour, I shall consider the large section as safe to the patient and more satisfactory to the operator; and that the arguments in its favour, advanced by Messrs. Clay and Walne, remain unaffected by the results. I would also call the attention of the profession to the fact, that the last case of Mr. West, and the case of Mr. Hargraves, both of which recovered from the minor operation, were not cured of the disease, and that where there are complications of disease, as in the third case of Mr. West, and in Mr. Phillip's case, the minor section is likely to prove as fatal as the major.

Having with considerable labour prepared for convenience of personal refer-

ence, a tabular synopsis of all the operations so far as they have come to my knowledge, and referred to the authority for each case, I offer it as the most accurate and extensive collection of cases yet published. [In this table all those operations are called major, in which the incision exceeded four inches, those below it being denominated minor. We shall not reprint the table itself, but content ourselves with giving the author's abstract of it.]

In this table 101 operations are noted, 18 of the minor section, 75 of the major, and 8 unknown. Of the minor operation 13 recovered, 5 died, or 1 in 3-5. Of the major 44 recovered, 31 died, or 1 in 3 1-3. Of the unknown 6 recovered and 2 died, or 1 in 4. Total 63 recovered, 38 died, or 1 in 2  $\frac{1}{2}$ .

Of the 101 operations, 20 or 1 in 5 1-20 were not completed in 6 or 1 in 16 there was no tumour found.

Of the unfinished operation 12 were the large section, 6 the small, and 2 unknown: 7 of the first recovered, 5, or 1 in 2 3-5 died; 3 of the minor recovered, 3 died, or 1 in 2. The unknown recovered. Total, 12 recoveries, 8 deaths, or 1 in 2  $\frac{1}{2}$  of the unfinished cases.

Of the operations in which no tumour was found, 5 were the major, 1 minor. In 11 cases, other important diseases coexisted: death occurred in all but 1. Of these 8 were the major operation, 1 the minor, the other unknown.

In 42 cases there were adhesions; in 28 none; in 31 not stated. Of the first 24 recovered; 18, or 1 in 2  $\frac{1}{2}$  died: of the second, 1 in 3  $\frac{1}{2}$  died.

[Abstracting certain cases in which the operation of gastrotomy ought not to have been performed, and others in which complications existed.] we shall have 90 cases: 62 recoveries, 28 deaths; that is 1 to 3  $\frac{1}{2}$  [2  $\frac{3}{4}$  Ed.] which is perhaps the fairest estimate of the mortality of the cases at present on record.

The average period of death in 26 cases in which it is noted, is 5-7 days after the operation.

ART. 107.—*On the Palliative Treatment of Carcinomatous Ulceration of the Os and Cervix Uteri.* Dr. Ashwell gives the following formulæ for the moderation and correction of the fetid and irritating discharge which adds so much to the misery of sufferers under this painful affliction. When the discharge is thin and ichorous, a daily injection consisting of sinapis pulv. ij. aqua ferventis  $\frac{3}{4}$  xvj, will be found highly servicable. When it is necessary to employ sedatives, he recommends the following:—

R Liq. opii sedativ.  $\mathfrak{M}$ xxx.  
 Infus. valerian.  $\frac{3}{4}$ j.  
 Mucilag. acaciæ,  $\frac{3}{4}$ ss. ft. Enema.  
 or  
 R Fol. belladon. exsicc. grs. xij.  
 Aquæ ferventis,  $\frac{3}{4}$ vj. M. f. Enema.

Dr. Ashwell's favorite astringents are—

R Decoct. secalis cornut.  $\frac{3}{4}$ xiv.  
 Argent. nitratis, grs. xx.

Tinct. catechu,  $\frac{3}{4}$ ij. M. f. injectio per vaginam.

Of this four ounces are to be thrown up twice a day. The decoction of secale is made by an ounce to a pint and a half of water boiled down to a pint.

Another is

Infus. quercus,  $\frac{3}{4}$ iv.  
 Pulv. gallarum, grs. xxx.  
 Tinct. catechu,  $\frac{3}{4}$ ij. M. f. injectio.

or

Argent. nitratis, grs. xv.  
 Aquæ rosar.  $\frac{3}{4}$ xvj. M. f. injectio.  
 Injiciuntur,  $\frac{3}{4}$ iv, ter in die.

*On the Diseases Peculiar to Women, 8vo. 1844.*

ART. 108.—*On Retroversion of the Uterus.* By M. LACROIX, M. D.

(*Annales de la Chirurgie*, Avril 1845.)

The author of this essay, gives in the first place, a minute history of the dis-

placements of the uterus, from the writings of previous authors, after which he enters immediately upon the subject of his communication.

**Retroversion** is a term applied to that form of displacement of the womb in which its fundus is directed backwards into the hollow of the sacrum, the neck being at the same time tilted forwards against the pubes. The organ is particularly disposed to this derangement from its anatomical peculiarities, which are such that its greatest diameter is vertical, and its greatest weight distributed above the centre of gravity.

**Causes.** These anatomical circumstances are sufficient in some cases to produce retroversion without the intervention of any secondary cause. But in others there may be at the same time too great width, or too narrow a condition of the pelvis, each of which is capable of causing the accident. In the first case it is allowed by the length and relaxation of the ligaments; in the second, the fundus is held down (Callisen and Boivin) by the promontory of the sacrum, and, therefore, as the organ becomes developed by pregnancy, its displacement is inevitable. Retroversion may also be caused by fulness of the bladder, (Denman, Merriman, Callisen, Boer, &c.,) by accumulation in the rectum, and by the pressure of the superposed intestines.

Continual abdominal pressure by corsets may determine retroversion in the early months of pregnancy in two ways: 1st, by the action of the intestines, which, as they are prevented from rising, depress the womb: 2d, by the pressure of the abdominal parietes, which push it backwards towards the sacrum. Other causes may be found in the too great width of the vagina, produced by repeated confinements; in the weight of the uterus itself, depending upon inflammatory engorgement; and lastly in pregnancy. In the latter case the retroversion ordinarily takes place about the fourth month, though cases are on record in which it happened at the fifth (Smellie), and even in the seventh (Merriman, Bartlett).\*

**Influence of Age.** There is no period of life which is not exposed to the accident of retroversion, whether in the impregnated or unimpregnated state of the organ. In the virgin state, the uterus has been found retroverted at the period of infancy (Jacquemier), as well as in middle and advanced age.

**Symptoms and Progress.** Retroversion may take place suddenly or gradually. In the latter case, the cause is generally to be found in an engorged state of the uterus itself, or in an increase in volume of the surrounding parts. The symptoms are shown in various derangements of the neighboring organs. There is usually difficulty or complete inability to pass the urine. In other cases where the displacement is gradual, the neck of the bladder is irritated as by a calculus, and the patient is tormented by continual inclination to empty the bladder. This symptom is readily explained, as is likewise the retention of urine, upon the principle of mechanical pressure.

Next in succession to the symptoms attendant upon pressure upon, and irritation of the neck of the bladder, are those which the retroverted uterus causes by its pressure upon the rectum. When the displacement takes place suddenly, the first announcement of the accident is sometimes a violent inclination to, without the power, of emptying the bowel. This feeling of tenesmus becomes more and more urgent as the case progresses, and the fecal matter when it does pass, is flattened and moulded into the shape of a riband. At length, the obstruction may become complete, and then arises all the train of symptoms characteristic of intestinal obstruction.

Whether it be by sympathy or direct irritation, is not so evident, but it is often seen, nevertheless, that when the retroversion is sudden, either in the virgin or pregnant female, hiccup, flatulence, vomiting, fainting, &c., commonly show themselves; and even when the displacement is more gradually produced, analogous symptoms of less intensity are present. The direction of the vagina is likewise altered, so that the superior wall becomes elongated and stretched upwards behind the pubes. The posterior wall is thrown into transverse rugæ, in the first

\* A case will be found in the *Gazette Médicale*, Mai 3, 1845, in which the displacement was only discovered during labour. [Ed.]

place, because it is too long for its new situation, and secondly, because the fundus of the retroverted womb presses it downwards.

If a vaginal examination be made, the fundus of the uterus will be distinctly felt, and has been mistaken for the enlarged cervix, or even a vaginal tumour; the os uteri will at the same time be perceived under the symphysis pubis.

*Diagnosis.* The diagnosis of retroverted uterus is for the most part simple, but frequent mistakes may nevertheless be made. The accident may be either overlooked where it is present, or suspected where it is not; many of the rational signs of the affection being so modified as readily to give rise to hesitation. For instance, one of the most common symptoms, stoppage of the urine, may not be present, because the retroversion is not direct, and the os uteri, therefore, does not compress the urethra (Martin). On the other hand, the obstruction to the flow of urine, without a vaginal examination, may call the attention exclusively to the bladder, and the case be then considered as one of stone. Constipation is also another prominent symptom; this may likewise be a source of error, and be attributed to intestinal obstruction, depending upon other causes. If there be hemorrhage, the case is apt to be considered as one of threatened abortion; or, if the woman be not pregnant, the attention may be exclusively arrested by the loss of blood. Lastly, the symptoms of peritonitis, which may supervene as the ultimate consequences of the retroversion, may be mistaken for those of the idiopathic disease.

There is, doubtless, no single sign of the accident which can be depended upon; taken per se, their value arises solely from their concurrence. If we, therefore, have difficulty in passing the urine and feces, especially arising suddenly, and to this be added the discrimination of a tumour, placed between the rectum and vagina, and projecting into both, together with the presence of the os uteri under the pubes, there can be little difficulty in diagnosing retroversion of the uterus.

*Treatment.* When the malady has been once satisfactorily ascertained, it is of great importance to reduce the displaced uterus as speedily as possible. In order to accomplish this, two indications must be fulfilled. The first is to attend to the organs which are interfered with by the displaced uterus; the second, to restore the latter to its normal position.

The bladder, then, must be emptied in the first place, as it is this organ which is generally suffering earliest from distension. This may sometimes be done by causing the woman to place herself upon her knees, in which posture, the urethra may be liberated from the pressure of the os uteri; but if this manœuvre does not succeed, we must have recourse to catheterism. This operation is, however, generally one of great difficulty, and often impossible. In the latter case, what is to be done? M. Lecroix says, puncturate the bladder, for severe as this may be, it is less hazardous than running the risk of its rupture.

The evacuation of the rectum is as necessary, and as difficult in some cases, as that of the bladder; sometimes, injections and purgatives will alone effect the replacement of the womb, but if the fecal matters are too solid to be thus removed, they must be extracted by a spoon, as recommended by Moreau.

Division of the symphysis pubis has been advised in otherwise insurmountable cases, by Purcelle and Gendrin. But the better proposition, when the woman is pregnant, is to empty the womb by puncturing the membranes.

In order to reduce the uterus to its natural situation, two proceedings are employed; the one, by an attempt per vaginam; the other, per rectum. When the former measure is decided upon, two or three fingers are to be introduced, and the uterus is to be pushed upwards. The reduction by the rectum, however, offers the greatest facilities. When the finger is either not sufficiently long or powerful, the introduction of an instrument to act as a lever, has been advised. In certain cases, all operative means fail; in others, the reduction is effected by the natural course of pregnancy. (P. 420-480.)



**ART. 109.—Remarkable Case of Extra-Uterine Fœtation with Stone in the Bladder. By Dr. R. LEITCH.**

(*Edin. Monthly Journal*, Feb. 1845, p. 103)

The subject of this curious case was an emaciated female, æt. 46, who applied for relief of the symptoms caused by calculus in the bladder. Before her system could be sufficiently strengthened to allow of the operation, she sank. The post-mortem examination showed a thickened and ulcerated bladder, containing a stone of unusual shape. In the right iliac fossa was a round substance, which proved on examination to be the remains of an extra-uterine fœtation. The singular shape of the stone having excited surprise, it was examined more carefully, and was found to consist of a triple phosphate, the nucleus being a fœtal tibia which had gained access to the bladder by ulceration of its coats.

**ART. 110.—On the Sex of the Child as a Cause of difficulty and danger in Parturition. By Professor SIMPSON.**

(*Edin. Monthly Journal*, Jan. 1845, p. 78.)

Professor Simpson demonstrates that the dangers of parturition are greater to the mother in the case of male than female births, and does so by proving, 1st, That of mothers who die in childbed and its diseases, a much greater proportion have given birth to male than female children; and 2dly, That in laborious and complex labours the sex of the child is much oftener male than female. Thus of 154 deaths, in 105 the child was male, in 45 female, that is in the proportion of 214 to 100.

He likewise gives the following table, illustrative of the proportion of male and female children in cases of tedious and complex labours.

Nature of Complication.	Total Cases.	Male Births.	Female Births.	Number of Males to Females.	
Tedious labour . . .	119	65	54	148	101
Convulsion . . .	28	17	11	153	100
Puerperal fever . . .	88	54	34	161	—
Ruptured uterus . . .	34	23	11	207	—
Hæmorrhage . . .	44	31	13	240	—
Forceps case . . .	24	16	8	200	—
Crotchet do. . . .	74	50	24	200	—
Total . . .	411	256	155	200	100

The author next proceeds to show that the dangers and accidents in parturition are greater also to the *child* in male than in female births. This is illustrated by the following facts:—

1. That a larger proportion of still-born children whose mothers die from labour or its consequences, are male than female; and, on the contrary, of those which are born alive, the greater number are females.
2. The proportion of still-born male children is greater than of female in the proportion of 130 to 100.
3. Of children which die in the actual progress of parturition, the number of males is greater than that of females.
4. More males than females suffer from the morbid states and injuries consequent on parturition.
5. More male than female children die in the earliest periods of infancy.

Dr. Simpson then proceeds to inquire into the causes of the greater danger both to mother and child in male births, and first establishing, in opposition to Quetelet, Clarke, &c., that male fetuses are not in their intra-uterine life more liable to disease than female, by showing the proportion to be equal in still-born *putrid* children and in premature births; he produces measurements to show that the transverse diameter of the head is 1-8th greater in male children.

To this slight increase, Dr. Simpson refers the greater number of casualties and complications accompanying male births. The whole process of labour is rendered more tedious in consequence of the size of the head in these cases being so closely proportioned to the size of the maternal passages.

The following table shows that the actual duration of labour is greater in male than female births:—

Labours.		Duration of Labour.		Average do.	
With Males	249	2'46 hours	33 min.	10 hours	38 min.
Females	178	1'02 "	29 "	9 "	34 "

"It will probably," the author observes, "be allowed that the principal, or indeed sole obstacle, which the mind has to contend with, in allowing the very small increase in size of the male infant head over the female to be the cause of the remarkable difference which we have traced between the results of the male and female births, consists in a difficulty of at first supposing so slight an apparent cause to be the agent by which such remarkable consequences are brought about. But in considering this and analogous questions, it must be held in recollection, that in all processes, whether vital or physical, in which, as in parturition, an established relation of mechanical conditions is required, any disturbance in these conditions, however trifling in itself, will, when followed out through an extended series of observations, be found to lead to results, the magnitude of which could scarcely have been previously surmised. From any study, however minute and accurate, of a limited number of cases of labour, no man would probably feel himself entitled to conclude that male births are in any notable degree more dangerous than female; but this, as we have seen, becomes a demonstrable and strongly marked fact, when we direct our inquiries into the records of hundreds or thousands of carefully recorded observations.

#### ART. 111.—On the Operation of Turning. By Professor SIMPSON.

(*Edinburgh Monthly Journal*, Feb. 1845, p. 116.)

[Although the operation of turning is one which the obstetrical practitioner is frequently called upon to perform, the method of performing it as it would seem by the following remarks, which are selected from a clinical lecture by Dr. Simpson, admits of considerable discussion. The author propounds the following queries:—]

*Should we seize both feet of the infant, or only one?* "Never be content," says Dr. Lee in his lately published '*Lectures on Midwifery*,' "with one foot when it is possible to grasp both." In most cases I hold this measure to be improper and unjustifiable, because it is always more difficult to seize both extremities than one; because one is quite sufficient for our purpose, and more safe for the life of the mother; and because by pulling at one extremity we more nearly imitate the natural *oblique* position and passage of the breech of the infant, than when we draw more directly upon the same plane, by dragging at both limbs equally. Indeed, in no cases of turning is it proper or requisite to bring down both extremities, unless in the complication of turning under rupture of the uterus. In that case, and that only, should we follow that proceeding.

*Should we seize the foot or the knee?* I believe the seizure of the knee to be preferable in most, if not all cases; for the knee is more easily reached, and

affords the operator a better hold. Moreover, turning by the foot appears to endanger a laceration of the uterus more than turning by the knee.

*Which knee should be seized?* On this point, you will find no direction in any modern obstetric works either British or foreign, as far as I know them; and yet I believe the secret of turning with facility and safety, after the waters are evacuated in particular, depends upon the knowledge of which of the two lower extremities of the infant should be seized. The one to be chosen is that which is *opposite to the side of the body which presents*; thus, if the right arm or shoulder presents, we should take hold of the left knee or foot, and *vice versa*. I believe this rule to be one of essential importance.

[It is sometimes difficult for the operator to distinguish between a knee and an elbow; Professor Simpson gives the following rule for avoiding the mistake:—Suppose the child to be lying, as it always does, doubled up, you may distinguish the elbow and knee from each other by the *opposite directions* in which they point. You have the convexity of the knee always looking upwards towards the head of the child, whereas the convexity of the elbow always points in the contrary direction.

**ART. 112.—On the Expulsion and Extraction of the Placenta before the Child.**

By JAMES Y. SIMPSON, M.D., F.R.S.E.

(*London and Edin. Month. Journal*, March, 1845.)

All writers on Midwifery concur in the opinion that there is no circumstance more trying to the attendant, or more fatal to the parturient woman than the recurrence of hemorrhage from presentation of the placenta. So high, indeed, is the mortality arising from this complication, that one woman in three perishes from it, a fatality which is as great as that of cholera, and more so than that of the dangerous capital operations. Such being the case, any attempt, as in the memoir before us, to diminish the fearful risk attendant upon placenta prævia, is, in the words of the author, "at least entitled to the consideration of the obstetric profession, even should it fail to secure their concurrence and conviction."

The principles of treatment in cases of placental presentation hitherto pursued may be reduced to two:—that which has been supposed to be chiefly applicable in *partial* presentation, namely, rupture of the membranes; and that which meets with more general approbation, and has been generally considered indispensable in severe "unavoidable hemorrhage," namely, turning. To these Dr. Simpson proposes to add a third—the *complete separation*, and *extraction*, if necessary, of the placenta before the child. He has been induced to offer this suggestion, from the circumstance, on one hand, that the most serious hemorrhage always occurs when the placenta is only partially detached; and on the other hand from the fact which he establishes upon the evidence of an extensive and well-arranged table of cases, "that when the placenta, in unavoidable hemorrhage, is once *completely* separated from its connexions with the interior of the uterus, the accompanying flooding in general entirely ceases, or becomes moderate in quantity." It virtually appears, from the examination of the table alluded to, that in 5 only of 111 cases in which the extraction of the placenta preceded the expulsion of the child, did the hemorrhage continue so profuse as to be considered alarming by the attendant.

Dr. Simpson displays the value of his new mode of treatment by a comparison of the mortality under it, and that which occurs under the usual method. It has already been stated that in unavoidable hemorrhage treated by turning the deaths are as 1 to 3. Among the 140 cases tabulated by Dr. S. 10 were fatal or 1 in 14. These figures, therefore, show a striking preponderance in favour of the new plan, but favourable as it is under this point of view, it becomes still more so by an investigation of the circumstances attending the death of the 10 fatal cases. Four of these died several days subsequently to delivery, so that they obviously did not die directly from the effects of hemorrhage; and in three

others, one died from the consequences of her husband's brutality, and the two remaining from causes unconnected with the placenta, so that, as Dr. S. observes, in 141 cases the deaths are reduced to 3, or 1 in 47.

In the conclusion of this interesting paper the author draws the following deductions :—

1. That the *complete* separation and expulsion of the placenta before the child, in cases of unavoidable hemorrhage, is not so rare an occurrence as accoucheurs appear generally to believe.

2. It is not by any means so serious and dangerous a complication as might *a priori* be expected.

3. In nineteen out of twenty cases in which it has happened, the attendant hemorrhage has been either at once altogether arrested, or it has become so much diminished as not to be afterwards alarming.

4. The presence or absence of flooding after the complete separation of the placenta, does not seem in any degree to be regulated by the duration of time intervening between the detachment of the placenta and the birth of the child.

5. In 10 only out of 141 cases, the mother died after the complete expulsion or extraction of the placenta before the child.

6. In 7 of these 10 casualties, the death of the mother seemed to have no connexion with the complete detachment of the placenta, or with the results arising directly from it, and if we do admit the three remaining cases, which are doubtful, they would still only constitute a mortality of 1 in 47 cases.

7. On the other hand, under the present established rules of practice, the deaths in placental presentation are as high as 1 in 3.

#### ART. 113.—On Galvanism applied to the Treatment of Uterine Hemorrhage.

By THOS. RADFORD, M.D.

(*Provincial Medical Journal*, Dec. 1844.)

"Uterine hemorrhage is usually divided into that which takes place in the early months, and that which takes place in the latter months of gestation. The latter class is again subdivided into what are called accidental hemorrhages, unavoidable hemorrhages, and the after hemorrhages. Accidental hemorrhages are those which arise from accidental causes; unavoidable hemorrhages are those which arise from a particular location of the placenta in the immediate neighbourhood of the os uteri; and the after hemorrhages are those which take place after the delivery of the child, and they may occur either before or after the expulsion of the placenta. You will be also aware that there are a number of other uterine hemorrhages which are unconnected with gravity; but it is my object in this lecture more particularly to dwell upon those discharges of blood which are connected with pregnancy in the latter months, and with labour. It is not my intention, on the present occasion, to enter into a full consideration of the subject, but more particularly to confine my remarks to that condition which is the result of profuse and long-continued bleeding, viz., exhaustion, a state highly interesting to the obstetrician, and which seems to me to require more than the recognized means for its management.

Now, we know that exhaustion may arise in all the varieties of hemorrhage; but we find that it is more especially produced by those impetuous and large discharges of blood which take place before, during, and after labour.

With regard to those cases of flooding, before and during labour, which have proceeded to a state of exhaustion, it has been the custom of many obstetrical writers to recommend the practice of delivery. Others have discountenanced delivery in this particular condition; and of course, where the principles of practice are unsettled in a case so important, it is very desirable that we should endeavour to discover some new method of treatment which shall place the question beyond dispute. Although such high authorities as Burns and Hamilton advocate delivery in these cases, it has always been my practice to recommend non-delivery; and if we were to analyse the cases that have been published in the reports of hospital and private practice, and those that have accidentally come

to our knowledge, we should be startled at the immense loss of life arising from these extreme cases of hemorrhage, where delivery has been adopted.

Now, I regret to say, I believe that the great ruling influence upon the mind of practitioners, in determining them to deliver at all hazards in these cases, is the dread of popular opinion. It is usually stated that no woman ought to die undelivered; and where a woman does die undelivered, it produces a very considerable sensation, both in the neighbourhood and in the mind of every party who may come to a knowledge of the circumstances. On this account a practitioner dreads the procrastination of delivery, lest death should occur before it can be accomplished, and his character consequently involved in censure. Now it appears to me, that when a practitioner is thus placed, he ought to possess sufficient moral courage to resist the pressure of popular opinion, and be guided by a higher principle in the discharge of his duty; and I am convinced that if the matter is fairly and dispassionately considered, it will be found that there is a great advantage in not delivering in these cases of exhaustion.

And first, with regard to the child, it is stated by the advocates for delivery, that there is the greater probability of its being saved by the immediate adoption of this operation, than by its delay. But if we take the pains to investigate the reports that have been published, as well as to examine into the results of the practice of private individuals, it will be found that the child is nearly always dead in these extreme cases. Therefore this consideration ought not to have much weight with us in deciding upon the principle of practice. And if we reflect upon the causes which give rise to hemorrhage, more especially in placenta prævia, we shall find sufficient reasons for understanding why the child should be generally dead. In the accidental species of hemorrhage, if the cause has been such as not only to lead to a separation of the placenta, but to something like a disruption or a wounded state of that organ, the death of the child is nearly inevitable; and in the unavoidable species, from the particular location of the placenta, if we recollect what must be the influence of labour upon the placenta itself, not only in producing detachment and a separation of its connection with the sides of the os uteri, but also the mechanical influence applied by the child's head coming upon it, we must see that in this case there is generally more or less of a disruption and breaking up of its structure; and consequently the child dies from bleeding from its own particular system.

If we go into inquiries as to the influence of the death of the child upon the hemorrhage, we must look upon it as being rather an advantage to the mother, because it takes off a certain demand upon her blood, or lessens what Hunter calls "the stimulus of necessity," and therefore makes such a change in the balance of her circulation, as would be a means of checking, rather than increasing, the discharge.

We will now proceed to consider the question as regards the life of the mother; and when we are contemplating a subject of this kind, a woman placed under extreme circumstances of inanition or exhaustion, we ought not to ask, "Ought a woman to be delivered?" but, "*Can a woman be delivered safely?*" That is the question we ought to endeavour to settle in our minds before we proceed to the operation. If we have a woman already in a state of exhaustion from large evacuations of blood, we must be certain that a plan of treatment which, in any way, produces an unfavorable change upon the nervous and circulatory systems, must add to the evils already existing. We have here sufficient prostration; and the mere emptying of the uterus will most inevitably increase it. Every surgeon is aware of the influence that is produced by the operation of tapping in cases of ascites in men strong in comparison of some of these poor women, reduced as they are by the loss of so large a quantity of blood. Syncope, nay, even death, is sometimes the result of the abstraction of the ascitic fluid. We know also in some cases, and especially where there is a particularly exalted state of the nervous system, or some particular idiosyncrasy, that simple evacuation of the uterus, by the natural efforts, will produce death! This very change then has in itself a very unfavorable influence upon a woman thus prostrated. But, besides this, we must bear in mind that there must necessarily be a great demand upon their powers by the stimulus of forcible delivery.

There are a number of other circumstances which ought to be taken into account, as regards delivery. And one of the most important of these is the physical or structural impediment that may arise from a rigid os uteri. And when we come to the bedside of a patient, (I am sure every gentleman who has had much practical experience, will bear me out in this statement,) we shall find that some of those dogmas which are laid down in books are wholly untrue. I now refer particularly to that assertion of certain writers, who say, that by the evacuation of blood, the soft parts become so weakened and dilatable, that delivery can always be accomplished. This I most positively deny. And therefore I say that there are conditions of this kind which will be an obstacle to delivery.

The os uteri will continue *undilatable*, although the woman may be in such a state of exhaustion as to be literally tottering on the brink of the grave! It is true that this state of matters does not generally exist, but it is too frequent to be overlooked in determining our line of practice.

Again, we should be aware that hemorrhages take place, and produce this state of exhaustion, before the woman has progressed to that period of pregnancy that would justify a practitioner in having recourse to forcible delivery; and this is a point not sufficiently dwelt upon by obstetrical writers. In proportion to the early occurrence of hemorrhage, so will be the obstacles to delivery, as regards the introduction of the hand into the uterus. And when we are considering the chances of delivery, and taking into account the dilatable state of the cervix and the os uteri, we should never forget the length of the former as regards the particular period of pregnancy. And not only is this to be taken into account, but there is another circumstance which must not be overlooked, viz., the degree of subsidence of the uterus into the pelvis; for according as the uterus remains high in the pelvis, so we may be certain that the difficulties of delivery will be proportionate.

In all uterine hemorrhages connected with pregnancy, there are certain attendant circumstances, viz., separation of the placenta, with or without disruption of its structure; exposure of the large orifices connected with the uterine sinuses, rupture of the decidual vessels and atony of the uterus, which is either primary or secondary. The natural means for suppressing the discharge are the formation of coagula, and the contraction of the uterus. As to the adhesion of the placenta, when once separated, or the cicatrization of this organ when disrupted, the practitioner can place no reliance on them in checking the flooding.

With respect to the coagulation of the blood, it may become influential in arresting slight discharges, but never ought to be depended upon in those profuse hemorrhages which we are now more particularly considering. The coagula which form in the vagina, and which are stated to be so important in the suppression of the bleeding, may become indirectly an evil instead of an advantage, by deterring the practitioner from making a proper investigation of the case, under the idea "that the disturbance of these coagula is death." In my opinion, the coagula which are more particularly to be depended upon, are those in the immediate neighbourhood of the venous orifices that have been exposed, and I repeat that these are of no avail in the more serious cases; and therefore we must solely trust for the suppression of these large discharges of blood to that most important agent, contraction of the uterus.

The ordinary means of producing uterine contraction are so well known that I need merely refer to them before the present audience. We have the bandage, friction applied briskly over the uterus, grasping pressure, secale cornutum, the application of cold, and, in the after hemorrhages, the introduction of the hand into the uterine cavity. But all these means may fail in producing this desirable change, and will fail and do fail in the extreme cases.

A fatal case having recently occurred in this town [Manchester], which produced a considerable sensation at the time, where delivery was adopted, contrary to the principles which I had always publicly inculcated in my lectures, I was led to investigate the arguments of those who advocate that practice, more closely than I had perhaps ever before done; and it struck me that we were deficient in

a means on which we might always depend for inducing uterine contraction, and so placing the woman in such a state of safety that the operation of delivery might be deferred. Whilst my mind was so much occupied upon this subject, I was consulted by my friend Dr. Goodwin, in a case of protracted labour, where the long forceps were required. The lady recovered well, with the exception of not being able to pass her urine. We administered all the usual remedies for a fortnight or more, using the catheter twice, sometimes three times a day, but without the least amendment. Upon Dr. Goodwin's suggestion, we decided upon the application of galvanism, which was undertaken by him, and the result was most gratifying, for the first application proved permanently successful. The decided efficacy of this plan in restoring the energy of the bladder, immediately led me to conclude that it was the very agent that I have already stated was a desideratum to ensure uterine contraction in cases of severe flooding, attended with exhaustion. We have here a woman reduced by loss of blood, with an atonic state of the uterus, either primary or as the result of the discharge. Now, as the advocates of delivery (*vide* Burns and Hamilton) say that this proceeding gives the woman the only chance of living, because, so long as the uterus remains distended by its contents, and its parietes atonic, those large venous orifices which have been exposed by the separation of the placenta, are so situated, that the chances of further effusion of blood exist; it occurred to me that the application of galvanism would so effectually act upon the uterine tissue as to induce firm contraction of its fibres, and thereby at once lessen those large openings, and bring the walls of the uterus into firm apposition with the body of the child, so as to entirely close them. This great object having been attained, we might safely procrastinate the delivery, and adopt such means as would tend to raise the vital powers of our patient, such as the administration of opium, stimulants, and support; and the performance of the important operation of transfusion. With the uterus in this favourable condition, our restorative means, and particularly transfusion, would be far more likely to be attended with successful results, than if the organ were distended and atonic; for in this case, the blood which is introduced into the system, either directly by transfusion or indirectly by nourishment, produces no permanent benefit, because it is rapidly discharged again. Analogy further led me to believe that my conjectures would not prove unfounded, for galvanism is particularly impressive in its influence upon the muscles of recently-killed animals, and we know how strictly allied in action, if not in structure, the uterus is to muscle.

I mentioned my views to a number of medical friends, who generally much approved of them; and I was soon enabled practically to prove their correctness, by being called in consultation to a case of frightful hemorrhage during labour, attended with extreme exhaustion, and where the os uteri was so rigid that the advocates of delivery could not possibly have carried their views into practice, without lacerating the os and cervix uteri. By this case I ascertained that galvanism produces an effective and powerful contraction of the uterus; and not only so as regards its tonic contraction, but it has also the power of energetically exciting alternate contraction when applied at intervals. I can tell you most seriously and most solemnly, that it produces these two important changes upon the uterus in such a degree as, in my previous reflections on the subject, I had no conception of. The alternate contraction excited by this agent is analogous to, and as powerful as, that which is observed in normal labour, and the tonic contraction is greater. I shall not relate cases in detail, because it would occupy too much time; but I may state that I applied galvanism in a case where the membranes were unruptured, and the uterus in a state of great inertia, and alternate contraction was immediately produced. Before this the membranes were very flaccid; but as soon as the galvanic circle was completed, they became extremely tense, and protruded low down into the vagina; and this state of tension did not subside when the alternate contraction ceased, as is observed in some degree in normal labour; for although the galvanic conductors were removed, so great a degree of tonic contraction of the uterus had been induced, that this membranous bag could not collapse.

I am thus satisfied, that by the application of this means, we can induce such a state of chronic contraction in the uterus, that in these extreme cases of exhaustion from hemorrhage, the woman may be placed in such a state of safety, that delivery may be postponed until a time arrives when it can be safely accomplished, and in the mean time we can have recourse to those measures which tend to raise the vital powers.

I think it probable that it may also produce one of the other natural means of suppressing hemorrhage which I have already referred to, viz., coagulation of the blood; but this I have not yet positively ascertained by experiment, although I am led to conclude that such is the fact, from some remarks made by Dr. Apjohn, in the article *Galvanism*, in the *Cyclopædia of Practical Medicine*.

In my previous remarks, gentlemen, I must be understood to refer to those cases of hemorrhage where the placenta is not placed over or near the os uteri; but I shall now proceed to speak of those cases in which uterine contraction has a tendency to increase the discharge, cases which are usually described as belonging to the class, unavoidable hemorrhage. In these cases, where the peculiar location of the placenta deprives us of the benefits that usually accrue from uterine contraction, and as it is the special influence of galvanism to produce this effect, it ought to be the object of the obstetrician so to modify his practice, as to place them within the range of this remedy. Before entering upon a description of the plan which I would recommend to be adopted in these cases, I shall first direct your attention to the practice of the older writers; and secondly, refer to the mode in which nature sometimes terminates them when left to herself. In looking over the authorities from about 1612 to 1790, we find that they vary in their practice. Some recommend the removal of the placenta before the child; others advise the same course conditionally, that is, providing it is offering itself very largely or decidedly to the finger of the attendant; others again, say that where it cannot be pushed back, it should be brought away before the child. It must be understood that many of these writers had not a correct knowledge of the true anatomical condition of parts in cases of placenta prævia, and I do not think it requisite to enumerate their names, as it would be occupying too much of your valuable time. You will find that in some of these cases, where the placenta was brought away before the child, according to the statement of these writers, the latter was even born alive, and in most of them the hemorrhage was suppressed. And whilst on this subject, I may call your attention to a few cases of more recent occurrence, where this practice has been adopted. It happened to me in 1819, to have a case of placental presentation, where I detached the placenta, because it was hanging down so low into the vagina, that there was no chance of doing anything else; the hemorrhage was immediately suppressed, and the child expelled by the natural efforts. I am also indebted to my friend Mr. Jesse, who is present, for the details of a case in which he detached the placenta, and in which the hemorrhage thereupon subsided. It was the practice of the late Mr. Kinder Wood, of this hospital, in many of these cases, to detach and bring away the placenta, and afterwards to leave them to the operation of nature, or to extract the child by the feet, as the case demanded. A case also occurred to Mr. Wilson, of this town, who kindly related the circumstances to me; the placenta had been rudely brought away by the attendant, and Mr. Wilson found the patient in a state of exhaustion, with the child still in utero. He extracted the child a considerable time after the removal of the placenta. It has occurred to me, in my hospital practice, to find that the placenta had been brought down in mistake by the midwives in these cases, and this without causing an increase of the flooding.

Smellie mentions cases in which the placenta was brought away, and where the hemorrhage subsided. In Dr. Collin's Reports of the Dublin Lying-in Hospital, there is a case in which the placenta was brought away by the midwife the evening before the admission of the patient into the hospital, and the hemorrhage was thereby suppressed. Baudeloque relates a somewhat similar case. And now let us consider the method in which nature sometimes terminates labours where there exists placenta prævia; and for this purpose I have, without



any great pains, collected 36 cases, illustrative of her powers in separating and expelling the placenta before the child.

Giffard mentions one case; Perfect, one case; Smellie, four cases; Chapman, one case; Ramsbotham, sen., six cases; Merriman, one case; Hamilton, two cases; Collins, one case; Barlow, one case; Dr. Robert Lee, two cases; Gower, one case; Millington, one case; Bailey, one case; Wood, three cases; Lowe, one case; Hunt, one case; Wm. Lowe, three cases; Dorrington, two cases; and I have met with three cases of the same nature myself. Besides these, Mr. Jesse has related to me a case of placenta prævia, where the entire ovum was expelled; Mr. James Kenworthy, a similar case; and the late Dr. Rigby has published a case also. Now, the bulk of these cases, gentlemen, have been detailed without any specific practical object, and consequently are more valuable to my present purpose than if they had occurred to myself, and had been brought forward to serve my own particular views. You may refer to many of them yourselves; and you will find in nearly all of them that the hemorrhage was suppressed immediately after the placenta was thrown off.

These cases, then, and the practice already referred to, as adopted by the older writers, and several modern obstetricians, appear to me to furnish data of a most important character, whereupon a practice, adapted to cases of exhaustion from unavoidable hemorrhage, may be based, in order to bring them within the sphere of the application of galvanism. And before entering upon a description of my proposed plan of managing these cases, I beg to remind you that it is an established fact, that partial separation of the placenta, whether in simple or in complicated retention of that organ after labour, or in placenta prævia, is attended with far more profuse bleeding than total separation.

In the earlier part of the lecture, I stated that one means of adding to the exhaustion already existing, is the evacuation of the uterus, whether that evacuation be partial or entire; therefore I consider that in these cases of placental presentation, it would be a decidedly important point of practice to draw off the liquor amnii *gradually*, as the first step in the management of the case. For this purpose I have somewhat modified Mr. Holmes's instrument for perforating the membranes, making the canula much larger, and having an oval aperture placed on each side near its open extremity. The entire instrument consists of a canula and trocar, which latter always lies concealed within the canula, by means of a spiral spring, except when pushed out by pressure on its button-like extremity. This trocar can be entirely withdrawn from the canula, so as to leave the latter free for the passage of fluid. Now I propose to pass this instrument through the placenta into the amniotic bag, and then remove the trocar, so that the liquor amnii may escape, a plan which I prefer to rupturing the membranes at the side of the placenta, because the water in the latter case would flow too rapidly, on account of the practitioner not being able to limit the size of the opening he might make; and also because by the plan now recommended, the integrity of the membranes being preserved, the placenta is thereby maintained in a better position for acting as a tampon against the open venous apertures when the head comes to press upon it.

In rupturing the membranes in the ordinary method, it is quite obvious that as the connexion between the membranes and placenta is broken, the latter is liable to fall down more or less into the vagina. Having thus drawn off the liquor amnii, the next step will be to introduce the hand into the vagina, then to pass the fingers to the edge of the placenta, and carrying them on between it and the os uteri, to sweep the hand round its whole circumference, so as completely to detach the placental mass, care being taken to avoid rupturing the membranes. We have now brought the case into such a state as to be within the influence of galvanism; for although this practice of detaching the placenta may be a means of suppressing the bleeding, yet it will not restore the depressed powers of the woman; and on that account we still require an agent to induce such a degree of uterine contraction as will secure her from all chances of further hemorrhage, while we have recourse to such measures as will tend to support her strength.

In order, then, to ensure uterine contraction, we must have recourse to galvanism, and the subsequent management of the case must be conducted on ordinary principles, such as supporting the woman by stimulants, nutritious articles of diet, and transfusion. The delivery should be deferred until the powers of the patient are so far rallied as to justify its being undertaken, however long the interval may be; and that mode adopted which makes the least demand upon her constitutional powers. It may happen that a repetition of the galvanic shocks may, after a certain period, induce such uterine action as will expel the whole of the contents of the organ; and if this should not happen, it appears to me that it would be the best practice, to apply the long forceps, having previously removed the placenta, that is if the head presents. If any other part of the child presents, the case must be managed on ordinary principles.

The novelty of these views may produce an impression unfavorable to their proper estimation, but I hope, gentlemen, you will recollect that it has been my object to bring them before the profession in order that their correctness may be tested. I wish to benefit poor suffering women in their hour of danger, and to be candid in my communications to my professional brethren. In my own mind I am satisfied as to the influence of galvanism, and its power of producing uterine contraction. I am also convinced that it has no evil influence on the life of the child in utero, and after its birth that it is an important means of resuscitation in cases of asphyxia. Objections may be raised that we have not always the apparatus at hand. The answer to this objection is the same as that which refers to the application of all instrumental means. In my opinion, no gentleman who possesses the principles of a correct obstetrician, would carry his forceps, vectis, perforator, crotchet, or transfusion apparatus along with him. These things are to be sent for in emergencies only, and the same remark applies to the galvanic apparatus.

My remarks have hitherto been confined to the treatment of those cases of hemorrhage that are attended with exhaustion before delivery, but there are other cases to which galvanism is equally applicable. If we investigate the cases given by authors, we shall find that there are many cases of accidental hemorrhage before delivery, where artificial rupture of the membranes has not succeeded in arresting the discharge, on which account several writers, Burns and Hamilton amongst them, advocate delivery in preference to this operation. Now, the artificial rupture of the membranes is recommended for adoption without reference to the condition of the os uteri; and it must be obvious, if this part is rigid and undilatable, and the flooding should continue although the membranes have been ruptured, that it would be highly hazardous to introduce the hand and to deliver by force. In such a case galvanism would place the woman in a state of security, by exciting the contraction of the uterus. I also consider that this power would be useful in some of the hemorrhages of the early months of pregnancy.

With regard to the after hemorrhages, especially those attended by exhaustion, I consider it particularly applicable where atony of the uterus is the principal feature of the accident. In those cases which occur previous to the expulsion of the placenta, it would be the duty of the practitioner to assure himself that this mass was not morbidly adherent to the sides of the uterus.

In hour-glass contraction, and other forms of irregular uterine action after labour, I anticipate great benefit from its use. In these cases there is a loss of balance between the contractile power of different parts of the uterine fibre, one part being in a state of atony, whilst the other is in a state of firm contraction. Now, if the galvanic current be directed in the longitudinal axis of the organ, it strikes me that you might excite the longitudinal fibres to contraction, and thereby restore the balance.

There are several other topics not directly connected with the subject of this evening's lecture which I shall slightly notice, in reference to galvanism. I am satisfied from positive trial of the remedy, that it will be found a most important agent in tedious labour, depending upon want of power in the uterus, and where no mechanical obstacle exists. I would also suggest the probability of its proving valuable in originating uterine action *de novo*, in cases where it may be con-

sidered necessary to induce premature labour. It seems to me also to be worthy of trial in certain cases of menorrhagia in the ungravid state, where, on vaginal examination, the uterus is found to be atonic, as evidenced by its large flaccid condition, and the patulous state of the os uteri.

Having made this digression, it is proper that I should remark, in reference to cases of hemorrhage, that I am not urging this plan of treatment upon the profession, with the view of superseding the ordinary means, but rather with the view of supplying a remedy in those extreme cases where these have failed. I do unhesitatingly say that the obstetrician has the power in most cases to control uterine hemorrhage, so as to prevent them ever reaching this extreme state of exhaustion. But, nevertheless, we do meet with this condition frequently in a large hospital practice, and also in private consultation practice. A number of cases have come to my knowledge within a very few months, where death have resulted from this excessive exhaustion. I therefore say that we ought to have some more certain means than delivery to depend upon in these cases; for, if this expedient be so important a means of saving life, how is it that it so often fails?

With regard to the mode of applying galvanism in these cases, I have used an electro-magnetic apparatus, contrived by Messrs. Abraham and Dancer, of this town, for medical and other purposes. It consists of a battery in a small jar, and a helix with conductors. For the sake of convenience, the latter are connected with the helix by means of long wires covered with an isolating material. The strength of the shock is regulated by a small contrivance situated on the stand of the helix, by means of which it can be either diminished or increased. One of the conductors, which is applied externally, has a hollow wooden handle, through which passes the wire before alluded to, in order to join a brass stem terminating at its extremity in a ball. The other conductor, which is contrived by myself, consists of a strong brass stem, seven inches long, curved to suit the vagina, and covered with a non-conducting material, having a small screw at its distal extremity for attaching it to a silver ball; at its other extremity it is received within an ebony handle, which is hollow, and through which passes a strong brass wire, looped at the end, and connected with the long wires before alluded to. This wire is kept disconnected from the brass stem by means of a spiral spring concealed within the ebony handle. The loop is covered with silk, and is intended for the thumb of the operator, when he is bringing the wire into connexion with the stem.

When the remedy is applied, the brass ball of the vaginal conductor is to be passed up to the os uteri, and moved about at intervals, on to various parts of this organ. At the same time the other conductor must be applied to the abdominal parietes over the fundus uteri. Shocks may be also passed transversely through the uterus by simultaneously applying the conductor on each side of the belly.

The application should be used at intervals, so as to approximate in its effects as nearly as possible to the natural pains. It may be continued until it meets the exigencies of the case.

#### ART. 114. *On Compression of the Abdominal Aorta in Uterine Hemorrhage.*

By M. SENTIN.

(*Bulletin de l'Académie de Méd. Belge.*)

[After some general remarks upon the nature of the hemorrhages which occur after childbirth, and respecting the history of the above operation, the author thus describes the process adopted by himself:]—"The woman is to be placed on a horizontal plane, with the head and shoulders raised, and the thighs flexed upon the pelvis, in order to relax the abdominal muscles as much as possible, and to avoid the mechanical engorgement of the uterine vessels. The surgeon, placed on the right side of the patient, uses the left hand to compress the vessel, keeping the right disengaged for any other purpose which the case may demand.

"The intestines being pushed on one side by gentle manipulation, the three fingers of the left hand are pressed firmly and deeply behind, and to the left of

the uterus, nearly on a level with the umbilicus. By this plan the aortic pulsations will be evident, and further pressure is then to be made in a direction downwards and backwards.

"In order that the operator may not be too much fatigued by continued exertion, his hand may be compressed by those of an assistant."

ART. 115.—*Case of Metro-Peritonitis from Rupture of the Vagina, in which the Matter was evacuated by an opening in the Loins.*

By M. GRAUS.

(*Bulletin de l'Acad. Roy. de Méd. Belge*, t. ii, p. 656.)

This almost incredible case occurred in the person of a female, æt. 44, who had borne five children. Her last labour occurred in May 24th, the infant being dead. The labour was natural, but was followed quickly by profuse hemorrhage, and in 30 hours by severe abdominal symptoms. Upon examination per vaginam, a laceration was found at the left anterior wall of the vagina; which was supposed by M. Graus to communicate with the peritoneum. In order to ascertain this fact, he introduced through the laceration an œsophageal tube, which penetrated without difficulty as far as the hypochondriac regions.

The patient was bled three times without benefit, when it occurred to M. Graus to inject the abdomen through the laceration, in order to favour the escape of the purulent fluid. This operation was repeated several times without material benefit, but, on the contrary, the patient became daily more exhausted by the occurrence of cellular abscesses in various parts of the body. Hectic and diarrhœa were now added to the rest of the symptoms, when M. Graus, under the impression that there was an accumulation of pus in the lumbar region which could not be made to escape per vaginam, decided upon making an incision in that situation. This was accordingly done, and gave issue to a large quantity of matter similar to that which passed below. When the injections were used, as before, through the vaginal rent, the fluid injected passed in a full stream through the lumbar opening, thus clearly proving the continuity of the suppurating cavity in the loins.

A few days after the opening was made in the lumbar region, the suppuration was much diminished, but the patient became greatly depressed by the formation of a fresh abscess in the thigh, and by the escape of fecal matter through the lumbar opening. The latter symptom, however, ceased at the end of twelve days, from which time recovery took place without any further drawback, and the patient was discharged, cured, at the end of ten months.

ART. 116.—*On the Nature and Causes of Puerperal Convulsions.*

By W. TYLER SMITH, M.B., London.

(*Lancet*, December 7, 1844.)

[In attempting to apply the physiology of the spinal marrow to the explanation of the mystery which has hitherto surrounded the subject of puerperal convulsions, it may not be uninteresting to give in the first instance the current opinions of the most eminent authorities respecting the nature and causes of this terrible disease. The following extracts contain the most recent views which have been advanced on the subject:—]

"The most usual proximate cause of puerperal convulsion is probably *pressure on the brain*, the pressure being sometimes produced by the rupture of a vessel; sometimes by serous exudation into the ventricles; sometimes, and by far the most frequently, by simple congestion of the cerebral vessels themselves. . . . Into the remote causes it is not my wish to enter at any length, because the subject is at least but unsatisfactory and ill understood. . . . The affection in my opinion originates most commonly in some deranged state of the uterus itself, and

consists in some irritation propagated from that organ to the brain." (*Rambotham's Principles of Obstetric Medicine.*)

"The exciting cause of eclampsia parturientum is the irritation arising from the presence of the child in the uterus or passages, or from a state of irritation thus produced continuing to exist after labour. The predisposing causes are general plethora; the pressure of the gravid uterus upon the abdominal aorta; the contraction of that organ during labour, by which a large quantity of blood circulating in its spongy parietes is driven to the rest of the system; constipation; retention of urine; previous injuries to the head, or cerebral disease; and much mental excitement." (*Dr. Rigby, Library of Practical Medicine.*)

"Convulsions of the kind I am considering are evidently connected with gestation or parturition, they occur at no other time, and are most common in a first labour. They arise particularly from uterine irritation, but also seem frequently to be connected with a neglected state of bowels. . . . The sympathetic irritation is almost invariably accompanied by an affection of the vascular system productive of great determination to the head, either directly or indirectly through the medium of the spinal nerves, which aggravates the evil, and indeed, becomes the chief source of danger. I am inclined to think, that in the majority of cases, the spinal cord is first affected by the state of the uterine nerves, and immediately afterwards the head suffers. . . . On inspection after death we sometimes find turgescence of the vessels of the brain, but very often no mark of disease is to be discovered elsewhere." (*Burns's Midwifery.*)

"Those women are most predisposed to the disease who have had epilepsy or hysteria in early life, who have suffered from injuries in the head, or who have had violent attacks of fever or severe affections of the brain. . . . There are many cases in which the peculiar condition of the nervous system of the uterus appears to be the sole cause, and in all cases it is the principal predisposing cause, for the fits of convulsions occur in most women in the first pregnancy and labour; and they often suddenly cease when labour is completed, after every remedy has been employed without avail, except artificial delivery. The condition of the brain upon which the loss of consciousness and convulsions depends, is obviously produced by sympathy with the nervous system of the uterus; and the fits return and increase in violence, until the uterus is emptied of its contents." (*Dr. Lee's Lectures on Midwifery.*)

"The immediate causes of puerperal convulsions are often very obscure. They appear to depend upon a loaded state of the vessels of the brain; at other times the brain appears to be influenced by distant irritation, either in the uterus or the digestive organs. The immediate attack may be brought on by a loaded or disordered stomach, or by food of an indigestible kind. . . . The violent straining caused by labour-pains, and even the disturbance of the frame by the earlier uterine contractions causing a temporary rush of blood to the head, will sometimes bring on convulsions." (*Dr. Locock, Cyclop. Pract. Med.*)

[Having endeavoured to show by these extracts the great discrepancy of opinion which exists, the author enters more directly into the subject of his essay, which is to demonstrate that puerperal convulsion is a purely excito-motory phenomenon. He particularly inculcates the necessity of a clear recollection of the anatomy of the nervous system, in order to understand the position which he is anxious to establish. "We are bound," he observes, "to consider the medulla spinalis and oblongata, with the corpora quadrigemina as forming together one distinct organ; as being a division of the nervous system which is to be looked upon as separate from the brain, cerebellum, and sensory and voluntary nerves." That this is a correct view of the matter has long been determined by actual anatomical proof, by both Dr. Carpenter and Mr. Newport, who have distinctly ascertained that in the invertebrata the excito-motory cord is anatomically distinct from that subservient to sensation and voluntary motion. The author thus proceeds:—]

Let us now examine some of the presumed causes of puerperal convulsion, and first of cerebral congestion. During the puerperal state there is a greater tenden-

cy to vascular fulness than at other times, and in some of the stages of labour, the plethora more particularly affects the head. In the second stage of labour, when the passage of the fetal head through the vagina excites the reflex action of the expiratory muscles, there is during each pain partial or entire closure of the glottis. This interferes with the circulation, and the remove of blood must affect the upper portion of the spinal marrow, although the fact has escaped the notice of writers on the subject.

It would follow from the above, that if simple pressure on the cerebral vessels caused convulsions as often as is supposed, the convulsions ought to occur most frequently during the second stage of labour. But this is not the fact, and, therefore, of itself is sufficient to overturn the generally received opinion as to the cause of the convulsions. There is too great a tendency to consider any change discovered after death as the cause of the disease during life, so in puerperal convulsions it has been usual to examine the brain, and to record all the lesions there displayed as causes of the disease. Yet, how, in a case of convulsion following afflicting intelligence, can the effusion into the ventricles which is found after death, be considered to have caused the convulsion. The patient falls into the fit *instantly*; she recovers her sensibility, but the fit is repeated, and she expires. In such a case the emotion is the cause, the effusion is the effect of the disease.

In thus attempting to set limits to the influence of the brain in convulsive diseases, I do not deny that effusion of blood or vascular congestion, particularly in the second stage of labour, does occasionally cause puerperal convulsion, but such instances are not sufficiently common to justify the general theory. Further, in these cases, it is not the brain, but the spinal marrow which produces them. Mere irritation of the brain as shown by direct experiments, does not produce convulsions; in order to induce them, the upper part of the medulla oblongata must be irritated.

Another cause of puerperal convulsion of the centric kind is hemorrhage. When violent flooding occurs, death usually takes place by convulsion. These convulsions depend upon the effects of loss of blood on the spinal marrow, and not upon the brain. So we see after an ox has been felled, and the functions of the brain destroyed, convulsions come on when the animal is bleeding to death.

When emotion is the cause of puerperal convulsion, the mental affection operates, as has been shown by Marshall Hall, through the medium of the true spinal system. The motion becomes as clearly the excitator of the spinal marrow, as does irritation of a peripheral nerve. These are instances of the centric causes of puerperal convulsions: let us now consider those of eccentric origin, those caused by irritation of incident nerves, the motor nerves being excited through the medium of the spinal marrow. First in importance, is irritation of the uterus itself, and of the uterine passages. The statistics of labour show that convulsions are relatively more frequent in head presentations, from which it has been inferred that pressure on the os uteri was the principal cause. But it is more probable that irritation of the vagina is the real cause. Convulsions are, however, often brought on by the mere presence of the fœtus in utero, there being no other exciting cause.

Irritation of the bowels is well known to cause convulsion, in other than the puerperal states. Thus, worms, indurated feces, drastic purgatives, will cause epilepsy, or the convulsions of children. It cannot, therefore, be wondered at, that when the excito-motory system is under the additional stimulus of pregnancy or labour, that similar sources of irritation should cause puerperal convulsions. Gastric irritation and irritation of the bladder are also undoubted though less frequent causes. In conclusion, it may be stated that labour is a function of the excito-motory system, and the true puerperal convulsion can only occur when the central organ of the system, the spinal marrow, has been acted upon by an excited condition of an important class of its incident nerves, namely, those passing from the uterine organs, such excitement depending on pregnancy, labour, or the puerperal state. While the spinal marrow remains under the influence of these stimuli, convulsions may arise from two series of causes; those acting pri-

marily on the spinal marrow, or *centric* causes, and those affecting the extremities of the incident nerves, causes of *eccentric* or peripheral origin.

The first include:—1, loss of blood; 2, pressure from congestive effusion, &c.; 3, asphyxia from closure of glottis; 4, emotion.

The second class comprehends:—1, irritation of uterine incident nerves; 2, irritation of incident spinal nerves of the rectum; 3, irritation of the incident gastric fibres of the pneumo-gastric nerve; 4, irritation of the vesical branches, and those of the surface of the body.

ART. 117.—*On the Effects of Ergot of Rye on the Parturient Female and her Offspring.* By SAMUEL HARDY, M. D.

(Paper read before the Dublin Obstetrical Society. *Dublin Journal*, May, 1845.)

[Long as has been the practice of administering the *secale cornutum* as an obstetrical medicine, its effects, both salutary and the reverse, are far from distinctly ascertained. The object of the communication, which we shall here condense, is that of rendering our knowledge upon the subject more precise. In carrying out this object, the author investigates the action of the medicine under the following different points of view:—]

1. *As to the time the action of the ergot on the uterus commences.* From certain tables, this time appears to be in some cases as early as seven minutes after its exhibition, while in others a much longer period is required; the average time appears to be about ten or fifteen minutes. The author considers that it has always commenced within twenty-five minutes at the furthest, when the child has been expelled alive. On the other hand, if a longer time than this has elapsed, instruments have been necessary, and the infant has been born dead. The beneficial action of the ergot is evidenced by the pains running into one another without any appreciable interval.

2. *Effect on the maternal pulse.* This part of the inquiry is one of considerable interest, and has not received the attention from practitioners that it deserves. In nineteen cases recorded by the author, there was a marked diminution in the frequency of the mother's pulse, after the administration of the ergot; and this effect generally commenced within fifteen minutes of its exhibition. In all cases in which the maternal pulse was affected, the fetal heart underwent a corresponding change. Here a practical question naturally arises, Is ergot a safe remedy in relaxation of the uterus, when the woman is reduced by previous hemorrhage? [The author does not give us any decided reply to this question, but contents himself with allusion to a single case in point, in which alarming prostration followed its exhibition.]

3. *The effects of ergot on the fetal heart.* This is said to be still more remarkable than the effect upon the maternal pulse, and therefore demands a serious consideration. By reference to the tables, it will be found that in the majority of cases a diminution in the pulsation of the fetal heart, followed the exhibition of ergot. The period at which this commences does not differ from that previously noticed, namely fifteen minutes; the most usual effect noticed by the author is a diminution, in the first place, of the frequency of the pulsations, which is succeeded shortly by irregularity in the beats, or complete intermission. The author here states a practical fact, deduced from his own observations, to the effect that the child is generally lost, however speedily the delivery be completed, if the pulsations of the fetal heart are reduced below 110, and at the same time become *intermittent*. The intermissions are a point of great importance in this statement, for the reduction of the pulse below 110 without this concomitant is not necessarily a fatal symptom.

Many different opinions have been broached as to the *modus operandi* of the ergot in destroying the life of the fetus, some attributing it to the powerful compression exercised by the uterine walls, others to a specific poisonous effect of the medicine. The author thinks that each opinion may, to a certain extent, be

correct, but leans evidently to that which attributes it to the poisonous qualities of the ergot.

The depressing effects of ergot upon the foetal heart are so great, that a considerable time elapses after birth before the child can be restored. The author has observed that children equally weak are restored to animation with much less difficulty when ergot has not been given.

The author, in alluding to the proper time at which the ergot should be given for the purpose of restraining or preventing "post partum" flooding, states, that there are three periods at which the medicine may be administered;—first, when the head is about to pass; secondly, after it has been expelled; and thirdly, as soon as the index-finger can reach the insertion of the funis into the placenta.

4. *The state of the uterus and lochial discharge*:—After the use of ergot, the uterus has frequently been found much larger than in ordinary labours, as has been remarked also by Dr. Johnson. The lochial discharge was sometimes pale and scanty. The children which are born alive usually do well.

The mode of administration of the ergot varies with different practitioners. The plan adopted by the author is to infuse half a drachm of the powder in three ounces of boiling water, and after straining to add ten or fifteen grains of fresh powder with a little sugar. This dose is repeated in twenty minutes, and if the uterus does contract well is given a third time.

[This interesting paper concludes with five tables arranged under the following heads:—1. Cases in which, after the exhibition of the ergot, the labour was terminated, the children being alive, by the uterine efforts alone. 2. Cases in which the children were born alive, but the application of the forceps, or vectus, became necessary. 3. Cases in which the uterus expelled the children still-born. 4. Cases where the still-born children required instrumental extraction. (pp. 224—248.)

ART. 118.—*On Ergot of Rye.* By Dr. PAROLA.

(*Dublin Journal*, Jan. 1845.)

The essay from which the following extracts are made gained the prize at the Scientific Meeting of Italy, held at Lucca. The author, in reply to the several questions put to him, observes:—1. That the ergot is common to other grasses besides the rye, as *festuca elatior* and *lolium temulentum*. 2. The mode of action of the ergot of rye is common to similar degenerations in other grasses. 3. The ergot of rye possesses a powerful action on the animal system, whether we regard it in a physiological or a pathological point of view; its effects as to regularity and durability are in direct proportion to its dose, and the activity of its preparation. 4. It acts both upon the nervous and vascular tissues of the uterus, the latter, however secondarily. 5. It may be administered—

a. In every period of labour when the uterine contractions are too weak, and particularly when the cervix is obliterated and the os dilated.

b. When convulsions supervene, which suspend or interrupt parturition.

c. When there is uterine hemorrhage, or when the woman has been liable to it in former accouchements.

d. In certain cases where the foetal head is of considerable size, and the pelvis neither deformed nor abnormally contracted, and the natural efforts are insufficient.

e. When the foetus is evidently dead, and there is reason to fear serious consequences to the mother should she remain longer undelivered.

The exhibition of ergot is injudicious under the following circumstances: 1st. When any obstacle renders the passage of the foetus impossible; when it is of monstrous size; when there is rigidity of the os or cervix uteri, or of the vagina and perineum. 2d. It is injurious in those cases in which labour is impeded by a true atony, or complete sinking of the uterine and vital powers.



## ART. 119.—On some of the Consequences of Undue Lactation.

By Dr. ASHWELL.\*

[The exhaustion induced by prolonging suckling is one of the most frequent forms of debility which we are called upon to witness in hospital or other practice among the poorer classes of the community. The more ordinary effects of this mistaken and mischievous habit, such as feebleness, loss of appetite, sinking at the stomach, pain in the back, leucorrhœa, &c., are sufficiently familiar to all, but there are other and more rare consequences which the practitioner will do well to bear in mind. The subject is admirably handled in the work from which we are about to quote, as the following extracts will evince :—]

“*Functional amaurosis*, accompanied by congestion of the conjunctiva, is a frequent result of excessive lactation, and seldom fails from its interference with the sight to arouse the patient's fears lest vision should be entirely and permanently lost. These apprehensions may easily be allayed, as doubtless in a great number of cases prompt weaning will alone remove the affection; still it may be necessary repeatedly to apply small blisters near the eye and to forbid its employment. Improved diet, country and sea air, exercise out of doors, iron and quinine, are important remedial auxiliaries. Nor is it unimportant that quickly-returning pregnancy should, if possible, be avoided. I have known several instances where, during a pregnancy immediately succeeding the exhaustion from over-nursing, the eye has been almost constantly “blood-shot,” and the sight excessively imperfect. Specks and slight ulcerations of the cornea, are occasionally connected with the exhaustion and irritability of nursing. In all these cases, provided there be no serious organic change, the patient may be encouraged to expect the restoration of this ‘invaluable faculty.’

“Several examples of *jactitation* have fallen under my notice. In one poor woman, an out-patient of Guy's Hospital, the seizures always occurred after she had nursed for three or four months; and they were so violent that she was compelled to lay down her baby when they occurred, lest she should let it fall. In another young and hysterical patient, who had borne children very quickly, there was during lactation, a continual and slight twitching, almost universal throughout the extremities, but especially in the face. In both, weaning was necessary before the sixth month, more on account of the leucorrhœa and general irritability, than for the jactitation.

“*Epilepsy* has been noticed by authors as the product of over-suckling, on the same principle as inanition, losses of blood, and deficiencies in its quantity and quality are known to be productive of this malady; I could adduce several instances where it is difficult to be distinguished from decisive and unquestionable epilepsy have occurred.

“*Insanity*, more or less permanent, may originate in over-lactation, commencing by peculiarity of sentiment, or temper, and plainly evinced by pertinacious adherence to an opinion once formed, however erroneous; and scarcely at all more strikingly displayed than in a determined opposition to any advice having for its end an entire or even partial weaning. In this early stage, the further advance or the protracted continuance of the malady might be prevented; but instead of weaning, large quantities of wine or porter, with animal food are resorted to. Still the desired supply is not obtained. The stomach being weakened, is scarcely able to bear the increased diet, and fever and indigestion, and apparent, not real strength, are the consequences. Together with a sparing secretion of milk, the symptoms already described become aggravated. The insanity becomes positive and acute, the pulse quick and sharp, the skin parched, and the whole system deranged. The condition of the patient is no longer doubtful; her actions are often violent; and without personal restraint, serious, perhaps fatal injury might be done to herself or others. I agree, however, with Dr. Locock, that the

\* On the Diseases peculiar to Females. Part III. 8vo. 1844.

aberration of undue suckling is rarely of this serious kind, unless where generous diet and wine are injudiciously administered; more commonly it shows itself in weakness, and absurd ideas, in whim and in caprice. In this stage, if weaning and careful treatment be adopted, the symptoms often subside easily and quickly; while in other cases, where probably a disposition to insanity is hereditary, the disease is of longer duration, requiring seclusion and confinement for its cure. If it be asked whether permanent insanity is ever the result of undue suckling, I confess that I am unable satisfactorily to answer the question. In my own practice such has never been its consequence; nor so far as I know have I discovered an example of the kind. The exhaustion of over-nursing induces the reaction and irritability on which the malady depends, and as this is gradually removed by the formation of a larger quantity of better blood, the insanity passes away, and the individual slowly recovers her lost reason. It may, perhaps, be said by those who regard this malady less seriously, that the insanity would have occurred independently of its intervention; the appended cases negative such an opinion. Additional confirmation is also furnished by the result of protracted lactation after another confinement. If, after such an event, more especially if the interval between the deliveries has been short, and the suckling be again protracted, a similar aberration will probably ensue, indicating the propriety of greatly curtailing the time of lactation, if not of entirely giving it up.

"It is not difficult to show many points of resemblance between this form of insanity and puerperal mania; this latter most commonly occurs in women of weakly, hysterical and irritable habits, and in the same class over-lactation is most frequently witnessed. In the greater number of examples of puerperal insanity, a modified antiphlogistic treatment only, comprising small local bleedings, cordial aperients, particular sedatives, with animal nourishment and tonics, is most successful. The same may be said of over-lactation. Puerperal aberration is rarely permanent, if insanity be not hereditary, and if improper treatment has been avoided. The same observations are true of the insanity of over-lactation. The former is disposed to recur in after confinements, and the latter will show itself afresh, after successive and injudiciously protracted nursings. There is, however, a marked difference in the frequency of the two diseases, the shock of parturition, the suddenness of the transition from pregnancy to the puerperal state, and the establishment of lactation itself, all of which involve considerable changes in the circulation and in the nervous system, sufficiently account for the prevalence of the one malady over the other.

"The *pathology* of these functional results of undue suckling, is by no means intricate or doubtful. An impaired and attenuated condition of the blood, and a consequently depressed state of the nervous system, especially of the organic system of nerves, is the clue by which all the symptoms may be unravelled." (pp. 725-28.)

*Edin. Monthly Journal, April, 1845.*

ART. 120.—*On the Diet of Infants.* By T. STEWART, M. D. New York.

(*Dublin Journal, March, 1845.*)

It is a rare event to have the secrets of the digestive process unravelled, revealed, and subjected to the test of actual experiment during life, or on a post-mortem examination. The former has been exhibited in the case of the patient of Dr. Beaumont. Of no less value are the results of post-mortem investigations of children performed by M. Guillot, for the purpose of ascertaining the condition of the contents of the alimentary canal of those infants which died under the use of the ordinary hospital diet. It is the custom at these, as well as in similar institutions, whenever an infant is sick, to withdraw it from the breast, and to substitute for it some farinaceous substance, made fluid by boiling. In the reports of the *Hôpital des Enfants Trouvés*, and *des Enfants Malades*, prescriptions of this nature form an important part of the treatment. The attention of M. Guillot being directed to the changes which the food given to children underwent, and to the excessive mortality among them, he instituted a series of investiga-

tions, with special reference to the state of the contents of the bowels. He was struck with the uniform occurrence of a jelly-like substance, both in the large and small intestines, which was proved to be starch, by its striking a blue colour with iodine.

Here we have a direct proof of the deficiency of the digestive power, the article given for food having undergone very little change, and therefore acting as a foreign body. From this fact, it appears to be the most rational course to pursue, to preserve as much simplicity as possible in the diet of infants. If in health, when digestion is unimpaired, animal food is most proper for an infant, in disease there can scarcely be any alteration to food of an entirely different character without incurring some risk. It is not my intention to assert that no alteration whatever is to be adopted, and because one kind of food is provided for the infant, that it would be hazardous to depart from it under any circumstances; such a course would be to discard all sound theory, and to abandon all attempts at controlling disease. In the case of infants, we can, without removing them entirely from the breast, avail ourselves of the mild and unirritating effects of substances of the same nature as that upon which the infant feeds. One reason generally assigned for the adoption of vegetable mucilage as arrow-root, &c., is, that it is a soft and soothing application to the delicate or inflamed mucous membrane. Now if the same object can be attained by any substance which possesses the same bland qualities, and is also of the same nature of the infant's food, there will be no necessity for resorting to any so highly indigestible as those of a vegetable nature.

With these impressions, it has been for years my practice to recommend a thin mucilage, a jelly made from isinglass, in the treatment of infantile diseases when soothing and unirritating food is indicated, in preference to the use of arrow-root, and with uniform advantage. It rarely happens that acidity, and other evidences of imperfect digestion, arise to any great extent when this is used; and from the appearances of the alvine discharges, it would seem that it is completely digested. Since the adoption of this species of diet, I have not had an opportunity of testing for undigested starch, in the evacuations from undigested food; for such are the benefits which have resulted from the use of animal jellies, in cases of inflamed mucous membrane of the stomach and bowels, that nothing could induce me to substitute anything for it.

ART. 121.—*On the Distinction between Infantile Diseases depending upon Inflammation and those which arise from Irritation.*

By P. HOOD, Surgeon, &c.\*

The importance of distinguishing between the symptoms of inflammation and irritation cannot be too strongly urged. Every practitioner must have experienced the disappointment which sometimes attends his best endeavours to relieve a suffering child, and been apprehensive of his remedies, more especially when he has had any doubt as to the cause of the disease. But by bearing in mind that morbid irritation exerts a powerful influence over the diseases of children, then treatment becomes more simple, and greater confidence is acquired. This consideration will in a great measure prevent the very common occurrence of the prostration of the strength of the child, at the onset of its disease, by the use of exhausting and lowering remedies. It will lead the practitioner to observe that children's diseases are not so speedy in their termination as is generally supposed, and that where he has hesitated to abstract blood, and has used more lenient means he has been rewarded; that the child, so far from sinking from want of bloodletting, has not only survived, but has proceeded rapidly to recover its health; while under contrary treatment, if it survived at all, its convalescence has been slow and protracted.

The practice of bleeding and leeching is inadmissible in diseases having their origin in morbid irritation. The only instances in which I have ever observed

\* *Practical Observations on the Diseases most Fatal to Children.* London, 8vo.

bloodletting and leeches borne with comparative impunity as remedies for what are termed the inflammatory diseases of childhood, have been at the earliest period of the attack, and when the greatest possible care has been taken to limit the quantity of blood taken. But even in these cases I have observed that the children long looked pale and sickly, and that some of them sunk under a renewal of the disease, to which the treatment adopted appeared to render them more liable.

The treatment most successful in allaying irritation comprises emetics, sedatives, and stimulating embrocations, when the lungs are attacked; sedatives, and aperients of a well regulated strength, with febrifuge medicines when the brain is the seat of the disorder.

ART. 122.—On *Gastromalacia Infantum*. By Dr. LION, of Breslau.

(*Casper's Wochenschrift*, No. 34, in *Schmidt's Jahrbücher*, vol. 46, No. 291.)

It is impossible to define gastromalacia pathognomonically, because it is not so much a special disease, as the result of some other disease on the quality of which it is dependent. This softening or perforation of the stomach, which we call gastromalacia, arises in two ways: it is either *acute*, as a consequence of *gastritis*, which is the rarer case; or *chronic*, as the result of some permanent affection of the nutritive organs in children. 1. In the first case, the child has either been for some time peevish and uneasy, or becomes so on a sudden, writhes and bends itself double, screams on the slightest contact with its stomach, which is hot, distended, and sensitive, has no appetite, throws up everything, and even vomits without having eaten anything, has violent retchings, is generally constipated, passes little or no urine, and that very hot and red, is tormented with a ceaseless thirst, has a small, hard, and rapid pulse, has cold limbs, and betrays even in its countenance an appearance of deep suffering. As the disease proceeds these symptoms grow more intense, and death often supervenes unexpectedly in the midst of convulsions. In some few cases a favorable crisis is brought to a happy result by means of purgatives, diuretics, and sudorifics, when the immediate cause of the disease is a faulty diet or cold. If the malady does not terminate either in death or complete recovery, the coats of the stomach are softened in consequence of the flabbiness of the membrane of the stomach which takes place in childhood, just as under similar circumstances in adults on account of the greater rigidity of the membranes and muscles of the stomach, *scirrhus* develops itself. The usual causes of this disease are pressure, blows, &c., on the region of the stomach, cold, the striking in of acute or chronic eruptions, vexation and passion on the part of the wetnurse, coupled with a sort of *constitutio annua*. Although this disease, owing to the nature of the organs affected, and the want of tone and resistance in the fibres of children, admits only of a still more unfavorable *prognosis* than in similar cases of adults, it is nevertheless curable under favorable circumstances. The treatment requires first of all a removal of the inflammation by the application of leeches round the stomach (from 2 to 6), fomentations, with an addition of the leaves of *hyoscyamus* or *conium*, and gentle rubbing in of *ungt. ciner.* and *ol. hyosc. coct.* and opening and tranquillizing clysters. Medicines to be taken internally are to be avoided as much as possible, for they generally do more harm than good. They must be given in small portions, and must belong to the class of demulcent and slimy remedies. Salts, even calomel, must be avoided, while the inflammation is at its height. If these measures subdue the inflammation, we must ascertain by careful observation, the path to recovery which nature has opened to us. If cold has caused the disease, it is generally decided by a critical sweating, assisted by a modification of diet, a weak infusion of lime blossom, at the most by some *liquor ammon. acet.* If the gastric disturbances are at the bottom of the mischief then (of course after a complete removal of the inflammation,) we may employ *sal ammoniac* in a *decoct. althææ*. There is no need of any special subsequent treatment. We must, however, particularly avoid *tonics*. 2. If the disease does not terminate then in a complete cure, and if death does not ensue in the first 24 hours, a condition supervenes which has hitherto been regarded as a distinct dis-

case—as gastromalacia. The child cannot digest anything, throws up everything it takes, and a little afterwards vomits without having taken anything; the matter it throws up is sour and fetid; and it always expresses a sense of pain when its distended stomach is touched. Soon after we have colliquative diarrhoea with the other manifestations of hectic disorder, and after long suffering the scene is suddenly closed by death, often without any warning. The prognosis is naturally unfavorable; and, hitherto, the treatment has not had much success to boast of. The only hope rests on the application of outward means and on a suitable diet. Food, whether liquid or solid, must be given to the child only in small portions, and at fixed intervals. Give it whey, new milk from the cow, or pure water, with light broth, a small quantity of yolk of egg and arrowroot, and bathe it in bran with or without milk, but only lukewarm. If amelioration take place, lessen gradually, and with the greatest care, the temperature of the bath. If the cooler baths also agree with the child, the prospect of recovery is near at hand. If costiveness occurs use mild clysters; certainly not any remedies which increase the irritability of the stomach. If these methods check the further progress of the disorder, the child should persevere in the use of the cool bath, or be washed daily in cold water; the malt-bath is also especially deserving of commendation, because it strengthens without stimulating. Exercise in the open air must not be neglected. The region of the stomach may be covered with an aromatic plaster. As a remedy to be taken inwardly we may use a decoction of acorns (*Eichelkaffee*), and if it agrees, *Ferr. carbon*, or *Tinct. ferr. muriat*.

But even when there is no chance of recovery, some of the most painful symptoms require at least palliative remedies, such as the burning thirst and the constant vomiting. The best way to subdue both of them is to swallow small bits of ice. The accompanying slow fever must be moderated as far as may be with constant regard to the organ which suffers. The only drink and nutriment under these melancholy circumstances should be fresh milk from the cow, the goat, or the ass.

ART. 123.—*On the Employment of Stimulants in the Treatment of Pulmonary Inflammation in Children.*

(*Journal für Kinder Krankheiten.*)

[We recommend the observations contained in the annexed Paper to the diligent attention of our readers :]—

Although in the inflammatory diseases of adults, great success is obtained by the use of antiphlogistic remedies, the same diseases in infants require considerable modification in treatment. The energy of the circulation in the infant is less developed than in the adult; wherefore it is more readily depressed by evacuates, and less prone to allow of resolution under their use.

This peculiarity is especially to be observed in the pulmonary inflammations, in which the symptoms of excitement are transient, and after bleeding speedily give place to symptoms of asthenia which increase if the antiphlogistic regimen be persisted in.

In the majority of cases, adynamic symptoms occur in the bronchitis and pneumonia of infants, soon after the first bloodletting, and may be thus recognized :—The infant becomes pale, the lips livid, and the face almost hippocratic, the pulse becomes almost uncountable, and the respiratory movements are correspondingly frequent. The cough, on the contrary, diminishes in frequency. If the bloodletting have been repeated, symptoms of cerebral exhaustion are superadded.

Dangerous, however, as these symptoms may be, the prognosis is not altogether unfavourable, if the antiphlogistic regimen be omitted, and stimulants be had recourse to. Wine in such cases, given in small quantities, quickly improves the character of the pneumonia, diminishes the frequency of the pulse, and procures refreshing sleep.

In a general way this change in treatment is indicated, when after the appear-

ance of bronchitis, Bloodletting, calomel, and tartar emetic have been employed for two days, without any appreciable amendment.

We must not wait for the appearance of adynamic symptoms before we have recourse to the stimulant plan of treatment; we must endeavour to prevent them. For this purpose less energetic stimulants, as the polygala senega and ammonia, will suffice. If the above-mentioned symptoms show themselves, we must not hesitate to administer wine and to continue its use until sleep be induced.

ART. 126.—*On the therapeutic Value of Alum in Whooping-Cough.*  
By Dr. GOLDING BIRD.

(*Guy's Hospital Reports*, April 1845, p. 134.)

In reference to this subject Dr. Bird thus remarks :—

“ During the last three years I have extensively prescribed this drug in cases of whooping-cough. Like all other remedies which have been considered specific, its administration will end in disappointment, unless discrimination be used in selecting the proper stage for its exhibition; but with this precaution I have no hesitation in expressing an opinion, from the experience I have now had of its therapeutic value in whooping-cough, that in one stage of the disease alum will be found a most valuable remedy.

“ It is unnecessary to allude to the distinct stages observed in every case of pertussis, further than to remark, that it is important to distinguish between the first, acutely inflammatory or catarrhal, and the second, or nervous, in which the spasmodic cough, with a more or less copious bronchial flux, exists. In the first stage, the use of any reputed specific would of course be avoided by every reputed practitioner, the safest treatment being that of ordinary bronchitis. But after the persistence of the disease for a week or two, and all inflammatory symptoms have subsided, and when with a cool skin and clean tongue the little patient is harassed by a copious secretion from the bronchi, the attempt to get rid of which produces the exhausting and characteristic cough, alum will be found to be of much value. I have not yet met with any other remedy which has acted so satisfactorily, or afforded such marked and rapid relief; the dose has generally ranged from 2 to 6 grains. For a child of two or three years the following formula has usually been employed :—

Aluminis, grs. xxv; Ext. conii, grs. xij; Syrup. rhæados, 3 ij; Aquæ anethi, ʒ iij. M. ft. Capiat coch. j med. 6 quæque horâ.

[Dr. Bird further states that no ill effects are perceived upon the bowels from the astringent qualities of the medicine. He does not explain the *modus operandi*, but thinks that it acts by allaying spasm and restraining inordinate bronchial secretion. He has used alum with equal benefit in the bronchorrhœa of emphysema.]

ART. 127.—*Efficacy of Liquor Ammonia in Pertussis.* Dr. Peyroton recommends the following prescription in whooping cough :—

R̄ Aq. destil. lactucæ vir.	ʒ iv.
_____ flor. aurant.	3 ij.
Symp. pæoniæ officin.	3 j.
_____ belladonnæ	3 ij.
Ammon. liquor.	qts. vj.

Misce, ft. Mist. coch. magn. unum 4tis horis sumendum.

Four cases are quoted as proofs of its efficacy; the cure in all was rapid and complete.

*Revue Médicale. Med. Times*, Jan. 18, 1845.

## PART IV.—STATISTICS.

ART. 126.—*Statistics of Sickness in different Classes of Soc* accompanying statistical information respecting the average duration in different classes, will be read with interest by those membership who already contract, or are thinking of contracting, for members of benefit societies. For some sensible remarks in the tables, we refer our readers to a leading article in the *Lancet* 1845.]

The duration of sickness among labourers and operatives in the kingdom is as follows :—

Age.	Labourers in East India Company's Warehouses.	Operatives in the Lancashire Cotton Factories.	Int
	DAYS.	DAYS.	
16 to 21	4.02	4.42	
21 .. 26	5.40	4.91	
26 .. 31	4.49	6.88	
31 .. 36	4.55	3.85	
36 .. 41	5.57	4.13	
41 .. 46	5.18	5.09	
46 .. 51	5.43	7.18	
51 .. 56	6.80	3.47	
56 .. 61	7.21	12.68	
61 .. 66	10.24	....	
66 .. 71	9.93	....	
71 .. 76	10.60	....	
76 .. 81	12.67	....	

Age.	Average Annual Sickness in Scotch Benefit Clubs.	Average Annual Sickness in Provident Classes throughout Great Britain.
	DAYS.	DAYS.
18	2.5	5.18
23	3.8	6.75
28	4.6	6.78
33	5.6	6.33
38	6.2	7.86
43	8.8	9.02
48	9.1	11.76
53	14.8	16.77
58	17.8	23.57
63	20.0	33.22
68	36.0	61.22
73	38.6	101.44
78	70.9	164.72

ART. 127.—Dr. ORR's *Statistical Tables of the Glasgow Infirmary.* Of 93 deaths by typhus fever, there occurred—

	MALES.	FEMALES.	TOTAL.
On the 8th day of the fever.....	1	1	2
.. 9th .....	5	2	7
.. 10th .....	4	2	6
.. 11th .....	2	4	6
.. 12th .....	6	2	8
.. 13th .....	2	4	6
.. 14th .....	1	1	2
.. 15th .....	2	5	7
.. 16th .....	7	1	8
.. 17th .....	2	1	3
.. 18th .....	3	1	4
.. 19th .....	1	0	1
.. 20th .....	3	3	6
.. 21st .....	0	1	1
.. 22d .....	0	3	3
.. 23d .....	0	2	2
.. 24th .....	1	1	2
.. 25th .....	0	2	2
.. 26th .....	1	2	3
.. 27th .....	1	0	1
.. 45th .....	1	0	1
.. 46th .....	1	0	1
.. 48th .....	1	0	1
Date unknown.....	10	0	10
	<hr/> 55	<hr/> 38	<hr/> 93

*Edinburgh Medical and Surgical Journal*, April, 1846.

ART. 128.—*Statistics of Poisoning in the New York States.* Of 83 cases of poisoning, there were—with laudanum, 39; arsenic, 13; opium, 8; tincture of sanguinaria, 4; morphine, 3; corrosive sublimate, 3; sulphuric acid, 2; paregoric elixir, 1; tartar emetic, 1; alcohol, 1; brandy and laudanum, 1; strychnine, 1; prussic acid, 1; phosphorus, 1; carbonate of potash, 1;—total 83. Of this number, 48 were criminal cases, 22 the result of error or ignorance, 2 of suicide, and 2 from unknown motives.

The smallest dose of arsenic taken was four grains; the largest, eight. The shortest time in which death took place after this poison was four hours; the longest, two days.

*Journal de Pharmacie et de Chimie.*

ART. 129.—*Statistics of Suicide in France.* The number of suicides in 1843 amounted to 3020; which surpassed that of 1842 by 154; of 1841, by 206; of 1840, by 263; so that there has been a regular increase during the last three years. The distribution of suicides in the different departments is as follows:—

Seine.....	551	Somme .....	71
— et Oise.....	113	L'Herault .....	13
— Inferieure .....	112	Haute Garonne.....	12
Marne .....	101	Le Gard .....	23
Nord .....	89	La Gironde .....	26
L'Aisne.....	78	L'Isere .....	30
Seine et Marne.....	75	Rhone .....	44

Of these there were of females, 239, or 24 in the 100. We remark also, 15 of children under 16 years of age; 26 octogenarians; 170 septuagenarians; and 284 sexagenarians. The months most prolific in self-destruction were May,



June and July. The most common mode of death was drowning: 1098 adopted this; 954 hanged or strangled themselves; 450 used fire-arms; and 206 destroyed themselves with the fumes of charcoal. Of these latter, 151 were of the department of the Seine, in which Paris is situated.

The motives were mostly disappointed love, jealousy, the consequences of debauchery, reverse of fortune, domestic sorrow, and physical suffering. One quarter of them were not of sound mind at the time.

*Revue Medicale*, April, 1845.

ART. 130—*Statistics of Casarian Operation*. The editor of the *Jour. de Chirurgie*, after some remarks on the operation performed successfully by M. Lebeau (v. *Med. Times*, vol. xi, p. 277,) gives an abstract of a Memoir published at Copenhagen by Keyser, entitled *De Eventu Sectionis Casaræ*. Michaelis is the first author who published the results of this operation; he excluded as apocryphal all the facts anterior to 1750, and brought his researches down to 1833. A Danish physician continued it to 1839. These are the two statistical tables that Keyser submitted to a severe examination; he struck out 62 cases from Michaelis' list, and added 69 which the German author had rejected or did not know of. He likewise enriched Levy's table with facts unknown to him. The number of cases in Michaelis' table was 265, and in Levy's 73—total 338; on which there were 128 successful, and 210 unsuccessful, operations. The mortality was—for children 0·32, for the parents 0·62. But, on account of the unsuccessful cases not having been published, it is positive that the mortality is greater; Keyser, therefore, chose the cases which had occurred under his own eyes; and on 67 cases he reckoned 52 fatal, or 0·79. Wilde stated that the mortality was about 0·90; and Levy coincides with this opinion. Considering the mortality in children according as the mother died or survived, Keyser found it to be 0·32 in the former, and 0·27 in the latter. According to the time which had elapsed from the commencement of the labour until the moment of the performance of the operation, Keyser has formed three categories; in the first it was done during the first 24 hours; in the second, from 25 to 72 hours after; and in the third, after 72 hours had elapsed. In the first the mortality was for the mothers 0·67, and for the children 0·28; in the second, mothers 0·55, children 0·32; and in the third, mothers, 0·72, and children 0·60. In 112 cases in which the conditions of the membranes were observed, there were 47 successful and 65 unsuccessful; of the former, in 12 the membranes were entire, and the average time which had elapsed in the others ere the operation was performed was 18 hours; of the latter the membranes were entire in 7 cases, and the average time in the remainder was 26 hours. Dividing these last into three categories, we find when the operation was performed immediately or at farthest in six hours after the rupture of the membranes, that the mortality was for the parent 0·50, for the children 0·14; when from 7 to 24 hours had elapsed, mothers 0·60, children 0·22; beyond 24 hours, 0·66, and 0·49. In 32 cases in which version, the application of the forceps, or perforation of the cranium, had been previously attempted, the mortality was 0·66; and in 28 of these 32 cases, the mortality of the children was 0·82; it was 0·60 when the diminution of the pelvis was owing to rachitism, and 0·69 when produced by mollities ossium. In 147 cases the incision was made in the linea alba; mortality 0·56: on the side in 56; mortality 0·68. In cases of hemorrhage, mortality 0·72; of hernia, 0·67. The mortality when the measurement of the pelvis was  $1\frac{1}{2}$  inch, and less, was 0·47; on the contrary, when it was  $1\frac{1}{2}$  and above, it was 0·66. On 123 cases, the causes of death were as follows:—

77	died from inflammation of the abdomen.
29	" " nervous accidents.
10	" " effusion of blood.
2	" " internal hemorrhage.
2	" " inflammation of the thoracic organs.
1	" " rupture of the uterus, and violent hemorrhage on the 7th day.

Relative to the epoch of death, it took place: once immediately; 9 times in less than 6 hours; 16 times in from 6 to 24 hours; 108 times from the 1st to the 7th

day; 16 times from the 8th to the 21st day: once on the 30th day by osteomalacia; and once on the 36th day by intestinal perforation.

*Medical Times*, Feb. 22, 1845.

ART. 131.—*Statistics of Hernia.* M. Maisonneuve has made a statistical report of 11,644 cases of hernia, which were examined during a period of six years at the Central Bureau, Paris. He thus distributes them:—

Of 11,644 cases of abdominal hernia of every description,  
8790 were observed in males.  
2854 were observed in females.

Of 8790 cases of hernia observed in males,  
8237 were inguinal hernia,  
307 were crural hernia.  
246 were umbilical hernia.

Of 2864 cases observed in females,  
1112 were inguinal hernia.  
639 were crural hernia.  
560 were umbilical hernia.  
543 were vaginal hernia.

Of 8237 cases of inguinal hernia observed in males,  
4483 occurred on the right side.  
3738 occurred on the left side.  
16 not determined.

Of 1112 cases of inguinal hernia in females,  
542 occurred on the right side.  
564 occurred on the left side.  
6 not determined.

Of 307 cases of crural hernia observed in males,  
171 occurred on the right side.  
125 occurred on the left side.  
11 not determined.

Of 639 cases of crural hernia observed in females,  
344 occurred on the right side.  
255 occurred on the left side.  
40 not determined.

From these figures Mons. Maisonneuve deduces the following corollaries:—

First. Herniæ in males are to herniæ in females as 3 to 1.

Secondly. In 100 herniæ found in males,

93 were inguinal.  
4 were crural.  
3 were umbilical.

Whilst in 100 of hernia found in females, the proportion was,

40 inguinal.  
21 crural.  
20 umbilical.  
19 vaginal.

Thirdly. In men inguinal herniæ are met with as often on both sides as on one only, and in the latter case those of the right side are to those of the left in the proportion of 5 to 4.

But in women inguinal herniæ are met with on both sides three times out of the four, and those of the right side are to those of the left in the proportion of 5.43 to 5.64.

Fourthly. In men, crural hernia is met with on one side only, three times out of four, and those of the right side are to those of the left as 7 to 5; whilst in women, crural hernia is met with on one side only four times out of five; and those of the right side are to those of the left as 7 to 5.

Under the head vaginal hernia are included all tumours of the vagina and uterus presenting externally, and requiring the use of the pessary, as cystoceles, rectoceles and prolapsus of the vagina and uterus.

Under the head umbilical hernia are included hernia of the linea alba, and displacement referable to the neighbouring regions.

*Gazette des Hôpitaux, and Medical Times, Feb. 22, 1845.*

ART. 132.—*Duration of Life in the Peerage and Baronetage, as compared with the Inhabitants of certain large Towns and Country Districts.*

Age.	Peerage and Baronetage.	England.	Surrey.	Metropoli.	Liverpool.	Age.	Peerage and Baronetage.	England.	Surrey.	Metropoli.	Liverpool.
20	38	40	42	36	33	65	10	11	11	..	..
25	35	36	38	32	30	70	8	8	8	..	..
30	31	33	34	29	27	75	6	6	..	..	..
35	27	30	31	25	23	80	5	5	..	..	..
40	24	27	27	22	21	85	4	4	..	..	..
45	21	23	24	19	18	90	3	3	..	..	..
50	18	20	21	16	15	95	2	2	..	..	..
55	15	17	17	14	..	100	1	..	..	..	..
60	13	14	14	..	..						

Age.	Peerage and Baronetage.	England (Mr. Farr.)	English Annuityants (Finlaison.)	Sweden and Finland (Milne.)	Carlisle (Milne.)	Equitable (Morgan.)	Amicable (Galloway.)	French Annuityants (Deparcieux.)
20	38	40	38	30	41	42	..	40
25	35	36	36	35	38	38	38	37
30	31	33	33	33	34	34	34	34
35	27	30	30	29	31	31	30	31
40	24	27	27	25	28	27	26	27
45	21	23	24	21	24	24	22	24
50	18	20	20	18	21	20	19	20
55	15	17	17	15	18	17	16	17
60	13	14	14	12	14	14	13	14
65	10	11	12	10	12	11	10	11
70	8	8	9	7	9	9	8	9
75	6	6	7	5	7	7	6	6
80	5	5	5	4	5	5	5	5
85	4	4	3	3	4	3	4	3
90	3	3	3	3	3	3	3	2
95	2	2	..	2	3	..	..	..
100	1	..	..	..	..	..	..	..

A comparison of the columns of these two tables is less favourable than might have been anticipated to the higher classes, the expectation of life among the families of the peerage and baronetage being during the greater part of life less than in the whole of England, in the county of Surrey, in Sweden and Finland, among the persons (chiefly males) insured in the Equitable and Amicable, and among the French and English annuityants. On the other hand, the expectation of life is greater than among the inhabitants of the metropolis and Liverpool.

In searching for an explanation of this somewhat unexpected result, two alternatives offer themselves; either the deaths recorded in the peerage and baronetage include those of an undue proportion of young persons, by which the expectation of life is made to appear less than it really is, or the sanitary condition of the entire class is less favourable than the many advantages they possess over the greater part of the community would lead us to expect. The former alternative does not appear very probable, as there is no obvious reason for the disparity just mentioned. All males who attained the age of 21 or upwards, have been included in the tables, without any other exception than those who perished by violence or accident. As death from these causes generally occurs comparatively early in life, these exceptions would tend to make the expectation of life appear somewhat more favourable. The latter alternative, therefore, namely, that the sanitary condition of the privileged classes is less favourable than that of the several classes included in the table, seems the more probable one.—[Dr. Guy on Duration of Life in the Peerage and Baronetage, *Statistical Journal*, March, 1845.]

**REPORTS**  
**ON THE**  
**PROGRESS OF THE MEDICAL SCIENCES.**  
*January—June 1845.*

The intention of the following Reports is to pass in review the principal additions to each department of Medical Science, which have been placed on record during the preceding six months. It is not contemplated that they should be confined exclusively to the notice of what is new; any fact or doctrine which may be considered practically useful, will, although not strictly novel, be regarded as worthy of commemoration. It must be obvious to all who are aware of the immense mass of information which is almost daily put forth by the medical press of this and other countries, that the notice of every subject would be an impossibility. It therefore devolves upon the writers of each Report, to select only such articles for retrospection as may possess superior recommendations, either of an intrinsic character, or in relation to the main end and aim of all medical knowledge—the alleviation of suffering and disease.

## REPORT ON THE PROGRESS OF PRACTICAL MEDICINE, PATHOLOGY, AND THERAPEUTICS.

BY THE EDITOR.

[The figures in parentheses refer to corresponding articles in the Abstract.]

It is probable that any nosological arrangement which might have been selected in the following Report, would have been open to some objection, as it is impossible, in the existing state of knowledge, to classify diseases in such a manner as to obviate imperfection. The writer has considered that under these circumstances he should lay himself less open to criticism by adopting that arrangement which has been suggested by Mr. Farr, than by attempting to devise any original method.

### § I.—Zymotic Diseases.

1. *Continued Fever.* The period which our present Report professes to embrace has not been remarkable either for the number or importance of the communications upon the subject of fever. We may, however, observe that Dr. Davidson has presented us with a series of aphorisms on the treatment of typhus which cannot fail to recommend themselves to notice by their simplicity, and perfect accordance with those enlightened views of the pathology of the disease which are prevalent in the present day. These observations will be found among our abstracts, and therefore need not be further insisted upon. (2) On the same subject we may refer to memoirs by M. Sandrat and M. Delaroque,\* in each of which the treatment is discussed at considerable length. The former relies entirely upon the repeated exhibition of Seidlitz water; M. Delaroque endeavours to point out the beneficial effects of more energetic purging. This latter memoir, in other respects, contains nothing which is either new or interesting to the British practitioner, and appears in fact to be a mere repetition of the principal points in a work published by the author in 1839, and of which as much notice as it deserves will be found in the *British and Foreign Medical Review*, Oct. 1844.

In a discussion upon the pathology of typhoid fever, in which the Académie Royale de Médecine Belge has lately been engaged, much difference of opinion existed upon the principal propositions contained in a paper read by M. Mascart.† The author, in acknowledging the origin of fever from miasmatic intoxication, endeavours to show:—1st, That the effect of the poison is to diminish the quantity of fibrin in the blood; 2dly, That the blood thus diseased excites an inflammation of the lining membrane of the blood-vessels, which inflammation is to be considered as the natural means of restoring the deficiency of fibrin, according to the laws established by Andral and Gavarret; and 3dly, That the ulceration of the intestinal follicles is likewise a natural process by which the morbid poison is eliminated, and consequently that it should not be interfered with. These opinions were combated seriatim by several of the members present, and by M. Fallot in particular, who clearly exhibited their untenability. The first proposition, as he observes, is negatived by the researches of Andral and Gavarret, who distinctly state that the blood undergoes little or no alteration in typhus until the latter stages of the disease. It is also, we may remark,

\* *Revue Médicale*, Jan. 1845.

† *Bulletin de Méd. Belge*. No. 3.

opposed by the more recent investigations of MM. Becquerel and Rodier,\* which tend to the belief that the fibrin is not diminished in typhoid fever at all, excepting in its most adynamic type, or when bloodletting has formed a part of the treatment. The second proposition is met by the serious objection that if diminution of fibrin docs in reality excite vascular inflammation, that phenomenon ought to occur in all cases in which this constituent of the blood is notably deficient. Such, however, is not observed to be the fact either in scurvy, or in the cases in which the blood has been artificially defibrinized, as in the experiments of Magendie. The third proposition, namely, that the inflammation and ulceration of the intestines is a salutary process, is scarcely worthy of formal refutation, the smallest experience being sufficient to show that this lesion forms, in all cases in which it is present, the most serious obstacle to recovery, and that the diarrhea which it produces is of all the symptoms the one most difficult to subdue.

2. *Remittent Fever* has been treated of by Dr. Swett† in a clearly written essay, the principal object of which is to confirm the opinion previously advanced by Dr. Steward, that the most characteristic lesion in the severe remittents of warm climates is a peculiar condition of the liver, which consists in a blueish gray or slate colour of the parenchyma, with the interspersion here and there of patches of a bronzy tint. The granular structure is at the same time quite distinct, each granule being surrounded by a ring of vascular injection.

3. *Scarlatina*. Under this head we have to mention a paper by Dr. Alison,‡ calling the attention of the profession to the not uncommon occurrence of pericarditis as a complication of the cutaneous affection. The author cites the names of those writers who do, as well as of those who do not, allude to this subject, and it appears that the latter are greatly in the majority. From this fact alone we should be disposed to think that the frequency of the complication has been somewhat exaggerated. That the pericardium, however, is liable to inflammation in the course of scarlet fever may be seen in the writings of Drs. Joy§ and Burrows as mentioned by the author, in those of Dr. Golding Bird,¶ and likewise in the *Stuttgart Collection of Children's Diseases*,‡ where the occurrence of purulent collections in the pericardium during scarlet fever is alluded to by Von Ammon. There does not appear to be any peculiarity in the type of the fever in which this complication exists, neither does it require any special modification in the treatment which is best adapted to the idiopathic disease, it is necessary merely to bear in mind, that as it supervenes upon an affection which depends upon the imbibition of an animal poison, great circumspection is necessary in the employment of depletory measures.(3)

Dr. Wilshire combats the opinion that the dropsy which follows scarlet fever is in general an inflammatory disease, and maintains, on the contrary, that it is rather one of an asthenic character. In this view of the case we entirely concur, believing it to be especially true as regards the children of the poor, who from circumstances, the operation of which is sufficiently evident, are particularly exposed to the sequelæ of eruptive diseases. Dr. Wilshire speaks highly of the iodide of potassium in a bitter infusion, as a remedy in these cases. (4)

Dr. Golding Bird, who took part in the discussion which was elicited by the enunciation of the foregoing opinion, speaks of two forms of scarlatinous dropsy, one simple and manageable, the other highly dangerous, inasmuch as the blood contains some of the uneliminated elements of the urine. In another place\*\* he endeavours to explain the more frequent supervention of the dropsical symptoms upon the slight than the severe forms of the eruption, somewhat after the following manner. He supposes it to be conceded that the disease originates in a poison, the primary location of which is in the blood. The two principal features of the disease, namely the eruption on the skin, and the erythismic excitement of the mucous surfaces, are the means which nature makes subservient

\* Gazette Médicale de Paris, 48, 49.

† Medical Gazette, Feb. 1845, p. 664.

‡ Guy's Hospital Reports, April, 1845.

\*\* Guy's Hospital Reports, April 1845.

† American Journal of Med. Sciences, Jan. 1845.

‡ Encyclopæd. Pract. Med., art. Scarlatina.

¶ Brit. and For. Rev. July, 1842, p. 205.

to the elimination of this poison. If therefore the rash be well developed, the system is effectually disembarassed of the morbid agent; but if not, the poison not being all excreted, some of its recognised after-effects result. How, he inquires, are these effects induced? Granting the existence of the imperfectly exhausted *materies morbi* in the blood, attempts will be made after the subsidence of the eruption, to eliminate this matter by one or other of the emunctories of the body. The kidneys are the organs by which matters in solution in the blood are usually excreted; and either from deficient determination to the skin in the first instant, or from the application of cold subsequently, are made to assume a supplementary duty; their capillaries therefrom become dilated, and congestion ensues. The consequence of this is a double lesion of their function; on the one hand, exudation of the albuminous element of the blood, and on the other retention of the nitrogenized products. Contemporaneously with this, serous effusion generally, but not invariably occurs.

Dr. Corrigan\* describes a peculiar and very fatal form of *scarlatina anginosa*, which he states has not been noticed by any preceding writer. In this, however, he is in error, as the same form is clearly alluded to by Dr. Watson (*Lectures*, vol. ii. p. 758) who, it may be observed, also acknowledges its great severity. This variety of the disease consists in the rapid swelling of the parts beneath the angle of the jaw, without any corresponding inflammation of the throat internally. The swelling occasionally arrives at an enormous size, and the child usually sinks under the sloughing of the cellular tissue, or from the effects of pressure upon the cervical blood-vessels. Dr. Corrigan especially warns the surgeon against opening the tumour, or making incisions through the integuments, which he might otherwise be tempted to do, under the impression that he had met with a case of diffused cellular suppuration. He has never seen the slightest benefit from such a proceeding, and when it has been practised the cellular tissue, instead of containing pus, has been found to be infiltrated with dirty-looking serous fluid. The only treatment which can be relied upon is that of the preventive kind, and which consists in the application of relays of a small number of leeches; but this must be instituted before the inflammation is fairly established, or the patient will, according to Dr. Corrigan, be inevitably lost. The same affection is apparently referred to by M. Rostan as forming a serious complication in typhoid fever. (1)

In connexion with the subject of scarlatinal dropsy, Dr. Golding Bird details a simple method of detecting urea in the blood and serous fluids. The blood having been allowed to coagulate, the serum is to be decanted, and shaken up with an equal quantity of rectified spirit, which causes the precipitation of albumen. The mixture is then to be filtered, and the filtered fluid, after having been evaporated to two drachms, is to be treated with an equal bulk of dilute nitric acid, and again filtered. The filtered fluid being slowly evaporated on a watch-glass, will exhibit the feathery crystals of nitrate of urea. The treatment recommended by Dr. Bird in this form of dropsy is simple, and, according to our experience, generally successful. It consists in the endeavour to promote active diaphoresis by the use of the warm-bath and small doses of the *Vin. ant. potass. tart.* in julep. ammonia.

4. *Glanders*. The possibility of the transmission of this fatal disease from animals to man, though long doubted, and even by some disbelieved at the present time, is nevertheless a fact, which may be considered as incontrovertibly established. The case reported by M. Pavard (5) is a faithful portrait. To those of our readers who are anxious to be acquainted with all that is known upon the subject, we would suggest the perusal of a paper by M. Rayer, published in 1837, of which an excellent notice will be found in the *British and Foreign Medical Review*, January 1842.

## § II.—Diseases of the Nervous System.

5. *Insanity*. The melancholy subject of mental derangement receives increasing attention. Among the most important additions to our knowledge in this de-

\* *Medical Times*, May 10th, 1845. *Clinical Lectures* by Dr. Corrigan.



partment, which the last six months have produced, we may refer to the Reports of Dr. Conolly\* on the Lunatic Asylums of Paris and other French towns, and to that of the Commissioners upon the condition of Lunatic Asylums in England and Wales. The latter affords a sad picture of the abodes of pauper lunatics in particular in this country, but in some degree also inculcates those intended for the reception of the wealthier classes. There is one practical fact elicited by the inquiries of the commissioners which, although not new, is yet worthy of repeated mention; it is that of the large proportion of cures among patients admitted within three months of their first aberration, as compared with those who have been kept at home, or in the workhouse for longer periods.

In a series of lectures now in the course of publication by M. Baillarger,† the hereditary nature of insanity is strongly insisted upon. According to the observations of M. Baillarger, the transmission of the malady is to be apprehended under any of the following circumstances:—when the father or mother is insane at the time of or previously to conception;—when the father or mother have insane blood relations;—when they are remarkable for eccentricity or violence of character;—when they have suffered from diseases of the nervous system; if either have committed suicide, or has been addicted to drinking, or is old relatively to the other.

Mr. Grantham‡ and Dr. Winslow§ remind us of the great importance of paying attention to the premonitory signs of mental derangement, for it is at this time that the patient stands as it were upon neutral ground, and that the question of his restoration is often to be decided. The symptoms indicative of the approach of mania which are clearly described by the latter writer, are, he thinks, in most cases to be referred to bodily derangement, and do not depend as is thought by some upon purely psychological disturbance.

Some useful remarks upon that form of insanity which is occasionally seen to follow the exhaustion induced by prolonged suckling, are to be found in Dr. Ashwell's late work. The treatment therein recommended is such as would be instituted by any well informed practitioner, and embraces weaning the child as a *sine qua non*, together with the persevering use of tonics, combined with sedatives, pure air, and exercise proportioned to the strength. (119)

6. *Apoplexy*. The pathological conditions of the cerebral portion of the nervous system, have always been held to be the most difficult to be comprehended of any to which the human frame is amenable. There is a want of correspondence between lesions and symptoms, a want of uniformity in the manifestations of diseased action, which renders the subject one of surpassing intricacy. Not the least remarkable property connected with cerebral diseases, is the fact which is frequently manifested in the malady under consideration, that precisely the same train of symptoms may be produced by causes diametrically opposite; as for example, by too much blood circulating in the vessels of the brain, and too little,—by a state of plethora as well as by that of anemia. This being the case, it becomes a question of the most vital consequence in practice to determine, to which of these conditions a given apoplectic seizure is to be attributed. This question is not so ready of solution as might at first sight be supposed. The tendency of medical men in general is too much to regard all apoplectic attacks as the result of fulness, whence bleeding is as much too frequently adopted. But that such a mode of viewing the phenomena of the disease as a general rule is as erroneous as the treatment arising out of it is dangerous or even fatal, will, we are convinced, become daily more universally admitted. The small amount of influence which the practice of bloodletting exercises in the cure of apoplexy is sought to be established in a late publication by Mr. Copeman;|| upon the evidence of statistical data. Although we cannot admit that all the cases upon which the deductions of this author are based, are the best which might have been selected, they are still, we think, sufficiently trustworthy to be recorded as an approximation to the truth. It appears that of 155 cases of apoplexy in which the treatment

\* British and Foreign Medical Review, April 1845. † Lancet, Jan. 1845, et. seq.

‡ Facts and Observations on Medicine and Surgery, 8vo. 1845.

§ Paper read before the Medical Society of London, reported in Lancet, March 1, 1845.

|| On Apoplexy. London, 8vo. 1845.

is specified, 129 were bled, and only 26 were not; of the former number, 51 recovered, and 78 died: the cures, therefore, were as 1:1½; the deaths, as 1:1½. Of the number not bled, 18 were cured, and 8 died, the proportion of cures being as 1:1½; of deaths, as 1:3½. Abstracting a certain number of these cases in which the bleeding consisted in the application of a few leeches only, we reduce the figures to 112; of those 38 recovered, and 74 died, i. e., there were two deaths where bleeding was practised to one cure. Although, as has before been said, these facts are to a certain degree imperfect, and like all deductions connected with so inexact a science as that of medicine, which are based upon the numerical method, are open to objection, they must, nevertheless, have the tendency as far as they go to place the abstraction of blood as a general remedy in apoplexy in an unfavourable light.

It is still however unquestionable, that in a certain number of cases of apoplexy, free bloodletting is imperatively called for. How then are these cases to be distinguished? The author above-mentioned places great confidence in the appearances of distension of the external vessels of the head; but this rule will in many cases be fallacious, in those patients in particular in whom constant exposure to the vicissitudes of temperature and season has produced a dilated condition of the capillary vessels of the face. In these persons a florid countenance is perfectly compatible with a state of system intolerant of the loss of blood, and would therefore, if relied upon, lead to serious errors in practice.

A surer guide in a doubtful case will be found in some observations by Dr. Marshall Hall,\* which we have considered of sufficient value to merit a place in our Abstract (7), and to which the reader is therefore referred. We shall merely remark, that the plan of diagnostic bloodletting, as recommended by Dr. Hall, is even as yet scarcely appreciated, and that when judiciously carried out it will frequently be the means of avoiding error, not only in the case in question, but in the many pseudo-inflammatory diseases which the readiest tact occasionally fails otherwise to diagnosticate.

In connection with the subject of apoplexy, we may mention a paper read a short time since before the Medico-Chirurgical Society by Mr. Hewett upon extravasations of blood within the cavity of the arachnoid. The author distributes these effusions into four principal groups; 1st. Those in which the blood is either liquid or coagulated, in the latter case being spread out in the form of a membranous layer; 2d. Those in which the extravasation presents itself in the shape of a false membrane: 3d. Those in which the blood is enveloped in a sac having every appearance of a newly-formed serous membrane; and 4th. Those in which the blood is fluid and encysted. Of these the third division is important in a physiological sense, as it tends to confirm the opinion that the blood is capable of undergoing organization by an inherent action, quite independent of that of surrounding tissues. In other respects the observations of Mr. Hewett are for the most part in accordance with those of MM. Becquerel, Legendre, Prus,† and Rilliet and Barthez,‡ the latter of whom, however, notices meningeal apoplexy only as it occurs in infants and young children. We may remark, *en passant*, that the rare occurrence of true sanguineous apoplexy in an infant only eleven days old, has recently been observed by Dr. Campbell.§

7. *Ramollissement*.—The latest researches upon the subject of cerebral softening are those contained in a memoir by M. Rochoux.|| The opinions of this writer differ from those of many previous authors, as Lallemand, Cruveilhier, Carswell, and more especially Durand-Fardel, in the affirmation that the softening of the cerebral substance, which is so commonly seen in the neighbourhood of apoplectic clots, is the precursor and not the consequence of the hemorrhage. This form of softening to which he applies the term “*hæmorrhagiparous*,” he be-

\* Practical Observations and Suggestions, &c. London, 8vo. 1845.

† Acad. de Med. séance d’Avril 4, 1844.

‡ See Dr. West’s Report on the Progress of Midwifery, &c. Brit. and For. Med. Rev. April 1844.

§ Med. Gazette, May 23, 1845.

|| Archives Générales de Médecine, Nov. 1844.

lieves to be present in 99 cases out of 100 of sanguineous apoplexy. This is doubtless, rigidly considered, too exclusive a view of the case, but we are nevertheless inclined to coincide with the author in so much as this—that although sanguineous effusion may undoubtedly occur in the midst of perfectly healthy cerebral substance, that such an occurrence is exceptional rather than frequent; if it were not so, the proverbially uncertain tenure of life would be rendered still more uncertain, taking into account the many causes of vascular excitement to which the brain is continually subjected. The objection to this view which some pathologists, and Fardel among the number, have advanced, that if this precursory change in the cerebral pulp were so often present, it would more commonly make itself known by symptoms, is, as M. Rochoux justly observes, quite invalid, for how frequently do molecular changes go on unsuspected in organs, the investigation of which is far more easy than that of the brain?

M. Rochoux is likewise at issue with Durand-Fardel and others with respect to the pathological indications of the cavities filled with a yellowish coloured serum, which are frequently found in the brains of persons who have had an apoplectic seizure. He believes them in all cases to be the remains of apoplectic clots; M. Fardel, as may be remembered, considers that they are indicative of softening only, and not of hæmorrhagic effusion. The question, which is one of great interest, must be regarded yet as sub judice, for until we are able to appeal to a numerous series of carefully recorded cases of persons dying at progressively advanced periods after apoplectic seizure, no conclusions can be arrived at which can be received as worthy of confidence. M. Fardel has, we are aware, attempted this to a certain extent, but a more numerous selection of cases is required in order to give that value to his deductions which he is disposed to attribute to them. (8)

The dependence of white softening of the brain upon suspension of a portion of the cerebral circulation, has been long recognized as an occasional consequence of ligature of the carotid artery. In a case which has lately been reported by Dr. Todd,\* the analogy of this lesion to senile gangrene is very distinctly shown. The patient was the subject of dissecting aneurism of the aorta, which had completely arrested the flow of blood through the right carotid artery. Soon after the original seizure, which partook of the nature of syncope, he became paralytic on the left side. After death the right centrum ovale exhibited a perfect specimen of white softening, the entire hemisphere being anæmic. The case is one of peculiar interest in other points of view, and will well repay the perusal.

8. *Cerebral Abscess.* The intimate connexion between abscess of the brain and affections generally of strumous origin, commencing in one of the structures of the internal ear, has been made the subject of a communication by Dr. Cormack,† which, however, need not detain us, as it contains nothing with which the profession has not long been familiar.

9. *Encephaloid Disease.* Dr. Cowan‡ has published two cases of this rare disease of the brain. As might be supposed, although there was ample evidence, in both instances, of organic mischief in the cerebral mass, nothing transpired to afford the slightest clue, at the time, to the real nature of the disease. Dr. Cowan, however, thinks, that as far as the evidence of these cases can assist the diagnosis, that malignant disease of the brain may be suspected when, in addition to distinct symptoms of organic change, pains of a neuralgic character are present, and are accompanied by gradual emaciation and a cachectic appearance.

10. *Epilepsy.* The only observations worthy of record upon this subject, as involving anything of novelty, are those of M. Selade;§ who has devised a method of treatment, founded upon the fact of the occasional suspension of the disease by the supervention of intermittent fever. His plan consists in the endeavour to establish an artificial intermittent, by the use of such means as bring about a

\* Medico-Chirurgical Transactions, vol. xxvii.

† London and Edinburgh Monthly Journal, April 1845.

‡ Provincial Medical and Surgical Journal, April 16, 1845.

§ Gazette des Hôpitaux, Jan. 16, 1845.

state resembling the several stages of the genuine disease. Thus, in order to induce the factitious cold stage, the patient is submitted to a prolonged immersion in cold water. He is then placed in a heated room, and covered with bed-clothes, until the hot and sweating stages are counterfeited. Dr. S. states, as the result of his observations, that after the repetition of this process for a few times, at the same hour, the artificial intermittent establishes itself without the intervention of the bath; and details two cases in which obstinate epileptic attacks were thus completely and permanently removed. The subject of epilepsy has also been treated of, if in a less novel, certainly in a less fanciful manner, by M. Rodier,\* who speaks highly of the scalp issue, and by Dr. Blackmore, whose remarks we have elsewhere given. (9 and 10.)

11. *Neuralgia*. Among the additions to our knowledge in this important class of diseases, we may refer to a monograph by M. Merat, † which treats principally of the painful affections of the ganglionic nerves. In the treatment of these, the author recommends the powder of valerian, and the Sedum acre, in large doses. The Cannabis Indica has likewise been suggested as a remedy for neuralgic diseases, by Mr. Donovan; ‡ as also tobacco, by Mr. Chippendale§ (11); the expressed juice of the misletoë, by Mr. Hardy; § and electricity, by Professors Wisgrill and Wirey. ¶ The extract of misletoë is used in the form of a plaster, applied over the affected nerve. The pain is said in most cases to subside in a few minutes. In addition to these instances, we may mention that Mr. Rynd \*\* proposes the treatment of obstinate tic by the direct inoculation of the nerve with narcotic substances. He relates two cases, in which the acetate of morphia, in solution, introduced by means of puncture, was eminently successful. In reference to this suggestion, we may remark, that Mr. Rynd has been anticipated by M. Jacques, (*Annuaire de Therapeutique*, 1844,) who appears some time since to have adopted the identical process which he has recommended (10.)

12. *Tetanus*. The periodical literature of the last few months holds out to us considerable encouragement in the treatment of this usually fatal disease, by the record of several cases, in which the means adopted have been followed by success. Of these Mr. Donovan †† relates two, and Professor Miller one, ‡‡ each of which yielded to the employment of the Cannabis Indica. The cases which occurred to the former writer place the powers of the medicine in a very favorable view; the first patient having recovered after taking 134 grs., although before its exhibition the spasms recurred every four or five minutes. According to Professor Miller there is a marked tolerance of this remedy in tetanic cases, and the unpleasant effects usually consequent upon its prolonged use are seldom observed.

Two cases have likewise been lately recorded in which material benefit, and in one case complete success, followed the use of ardent spirits in intoxicating doses. The first case is one related by Mr. Stapleton, §§ in which the tetanic spasms were entirely suspended, but the patient was not saved. The second occurs in a paper read before the Medico-Chirurgical Society by Dr. Wilson. || The patient, who was under the charge of Mr. Hott, of Bromley, was obviously cured by the exhibition of brandy in enormous quantities, opium being at the same time studiously avoided. During the period of eight days, the patient took as much as two gallons of brandy, in addition to wine, &c. The discussion which followed the reading of this case chiefly turned upon the value of opium in tetanus, upon which the most opposite opinions appeared to be entertained. Among those, however, who supported the relater of the case in his opinion of the inutility of narcotics, were Dr. Wilson, Mr. Solly, and Mr. Curling. The subject

\* Gazette Médicale.

† Essai sur les Névroses des Nerfs Ganglionnaires.

‡ Dublin Journal, Jan. 1845.

§ Lancet, March 1, 1845.

§ Medical Times, April 19, 1845.

¶ Transactions of the Vienna Medical Association, British and Foreign Medical Review, April 1845.

\*\* Dublin Medical Press, March 12, 1845.

†† Dublin Journal, January 1845.

‡‡ London and Edinburgh Monthly Journal, January 1845.

§§ Lancet, March, 22, 1845.

|| Meeting of April 2nd, 1845.

of tetanus has also been treated of by Dr. Inglis,\* and Mr. Stafford † Amid the conflicting testimony which we meet with respecting the treatment of this fearful malady, it is difficult to arrive at any satisfactory decision as to the plan most likely to be successful. The fact, however, that the majority of tetanic patients appear to die by asthenia, affords strong evidence in favour of the propriety of the method adopted in the cases last related.

#### § IV.—*Diseases of the Respiratory System.*

Upon this class of diseases we have to notice many interesting communications. Of those which relate to the diseases of the respiratory system in general, we call the attention of our readers with peculiar pleasure to a paper by Mr. Sibson,‡ which has for its object the determination of the topographical changes which the thoracic organs undergo in disease. The value of this laborious essay in the study of chest diseases cannot be too highly estimated; and whoever fails to make himself familiar with its contents, will be without excuse for those errors in diagnosis which it is so well calculated to obviate. We offer no apology for thus alluding to a work which, though recent, does not strictly come within the prescribed limits of our report, the fact that it is published in a form which precludes its general circulation, is, we conceive, a sufficient reason for its mention. § It is not our intention to analyse this paper at the present time, as we shall have to refer to it on more than one occasion. We shall pass at once to the subject of

13. *Phthisis Pulmonalis.* The first work which we are called upon to notice under this head, is one recently published by Dr. Evans, in which doctrines widely different in many respects from those in common circulation are enunciated, but which will not, we imagine, be very generally received. According to the views of this author, that product, which we have always been taught to consider as of primary importance in the pathology of the disease, namely, tubercle, plays but a secondary part; being no more, to use his own expression, the cause of the disease, than the pus is of pneumonia. Neither are the symptoms of phthisis allowed to depend upon the presence of this deposit; the emaciation, hectic, cough, &c., being all ascribed to pulmonary irritation, and active pulmonary congestion, combined with what he terms a "diminished force of growth." As may be surmised from these opinions, the author is a believer in the inflammatory origin of tubercle; that product being, according to him, only a modification of pus, and secreted under certain states of constitution in the same manner. Pulmonary irritation is, with him, the most important condition to which the consumptive patient is exposed, that being in all cases the precursor and cause of the more serious and fatal symptoms. It is necessary, however, to state, what it is that the author designates by the term irritation. He observes that in a pathological point of view, irritation consists in the presence of a diminished quantity of blood in the affected tissues, which, in consequence, become dense, contracted, and pale, the natural secretions being at the same time suspended. This condition as it occurs in the lung he considers to be declared by an exaggerated respiratory murmur. We must here remark that, although we may not be disposed to object to the author's definition of irritation, if by that term he means to designate the same state of capillaries which, as in the experiments upon the web of the frog's foot, (James, *on the Nature of Inflammation*,) is brought about by a puncture or other means, and is the precursor of those vascular changes to which the term inflammation is applied, we must still doubt that such a condition ever precedes the deposition of tubercular matter, in the relation of cause. It is, moreover, we must confess, perfectly unintelligible to us how a state of lung in which the "tissues" are "dense," "contracted," and "pale," and in

\* *Provinc'al Medical Journal*, February 19th, and March 26th, 1845.

† *Medical Gazette*, April 29th, 1845.

‡ *Transactions of Provincial Medical Association*, vol. xii.

§ Since the above was written we are happy to find that the essay alluded to has been published in a separate form.

which, therefore, the air-cells must be diminished in capacity can be evidenced by a sign which presupposes the admission of a preternatural quantity of air.

We shall pass over the author's opinions respecting the origin of tubercle, and briefly allude to his mode of treatment. This he divides into sections corresponding to the different stages of the disease. We have, therefore, the treatment of the phthisical predisposition, that of pulmonary irritation, of the period of inflammation, and of suppuration.

The first stage, or that of predisposition, is, according to Dr. Evans, signaled by a "deficient force of growth," causing atrophy of the red tissues, and muscular weakness, emaciation being sometimes an accompanying symptom, at other times an increased deposition of fat. In the latter case, especially if the pulse retains its ordinary frequency, [some might reasonably doubt wherein the phthisical tendency consists in these instances] in addition to the means presently to be mentioned, the author allows wine and fermented liquors. In the former, these must be strictly prohibited, and in their place we are to exhibit such medicines as are capable, according to Dr. Evans, of diminishing the "conducting power of the nerves," such as opium and hydrocyanic acid. In addition to this, nutritious diet, pure air, &c., are indispensable. In meeting the second indication, or that of the treatment of pulmonary irritation, the author insists upon the necessity of distinguishing whether the irritation be primary or secondary. The treatment varies in the two cases. The circumstances which generally give rise to secondary irritation of the lungs are said to be chronic inflammation of the larynx, womb, and kidneys. The treatment, therefore, resolves itself into that most suitable to the disease to which the pulmonary complication is sympathetic, combined, it may be observed, with those means best calculated to allay the secondary irritations themselves. The author avoids the mention of the treatment of the uterine and kidney affections, and confines himself to that of the larynx, which consists in mercury, counter-irritation, leeches, seton in the neck, and painting the part externally with iodine or nitrate of silver. The special treatment of the pulmonary irritation is, inhalation of the vapour of water, with counter-irritants, and small doses of opium and prussic acid.

The author now addresses himself to the management of the third stage of phthisis, that of pulmonary inflammation. Here, as he very properly observes, great difficulty arises, in consequence of the fact that those means which are best calculated to subdue the pulmonary inflammation, viz., depletion, &c. are, unfortunately the most likely to confirm the tuberculous predisposition. The practical tact of the physician is shown in the manner in which he steers between this Scylla and Charybdis in therapeutics. It is here that Dr. Evans relies upon the treatment by repeated counter-irritation, the advantages of which he appears to have just appreciated in rather a disreputable school it must be allowed,\* but which, if he is to be believed, is a striking instance of the fact, that good may sometimes arise out of evil. The plan he adopts is that of stimulating liniments repeatedly applied to the whole chest, and consisting of equal parts of spirit of turpentine and acetic acid. In the treatment of the suppurative stage, as laid down by Dr. Evans, there is nothing to detain us.

We have thus endeavoured to lay before our readers a brief abstract of the general tendency of the author's views; from many of which we, however, think it right to express our dissent, premising at the same time that there is much that is indicative of unusual practical acumen, and calculated to excite reflection upon a disease which we are all too apt to abandon as inevitably beyond the reach of our art.

That phthisis pulmonalis occasionally undergoes a spontaneous cure has long been believed upon the evidence of the cicatrices and cretaceous remains which are sometimes found to exist in the lungs of persons in whom the disease had either never been suspected during life, or whose pulmonary symptoms had entirely subsided. Dr. H. Bennett† endeavours to prove that this fortunate termi-

\* Under St. John Long. † Edinburgh Medical and Surgical Journal, April 1845.

nation is far more frequent than is generally suspected, and supports his opinion by statistical data, which may be thus briefly recapitulated:—

Of 73 cases examined by himself, cicatrices, &c. were found in	28
135 . . . . M. Boudet, . . . . .	116
100 . . . . M. Rogée, . . . . .	51
<hr/> 308	<hr/> 195

So that, of 308 cases, the appearance alluded to was found in more than one half. It would afford us much gratification to be able to believe that Dr. Bennett had not overrated the frequency of the spontaneous cure of tubercle as thus supposed to be indicated. But this we cannot do. We do not doubt in the least degree the correctness of the data he has produced, but the deductions drawn therefrom do not appear to us to be in all cases trustworthy. That the presence of cretaceous concretions in the upper lobes of the lung are a proof of the previous existence of tubercular deposit may readily be conceded, but it may be thought questionable whether the puckered cicatrices which, by the author's own admission, are often found to exist alone, are in all cases to be referred to the same lesion. The pulling-in of the surface of the lung may be produced by other causes than that of the healing of tubercular cavities, as for instance by that peculiar contraction of the pulmonary cellular tissue described by Stokes under the term *cirrhosis* of the lung, and also as Fournet has shown by the mechanical effect alone of pleural adhesions. With deference to Dr. Bennett, we are constrained to believe that such has been the origin of the appearance in some of his own as well as in the cases of Boudet and Rogée. (14)

Dr. Hennis Green has called our attention to certain striking differences which are to be observed in the phthisis of young subjects, as contrasted with the same disease in the adult. The principal distinction is to be found in the fact that tubercular matter is more generally diffused through the lung in the infant, and that its consentaneous deposition in other organs is more frequent. Unlike the disease as it shows itself in the adult, Dr. Green has also observed that the disease is often more developed in the lower and middle lobes than in the upper, the same locality being commonly the site of caverns, when none exist in the upper lobes. This is a practical fact of the great value, and one the knowledge of which may prevent much misapprehension in diagnosis as founded upon the auscultatory phenomena of the disease. The symptoms of phthisis in the child are in many cases exceedingly obscure, since, as has been noticed by Rilliet and Barthez, we are unable to derive the same positive information from the stethoscope as is afforded by it in the adult. The harsh respiration under the clavicle in particular, which is so valuable a sign of tubercular deposition in the latter, may exist to an intense degree in the young child without the slightest lesion of the pulmonary tissue. The cough and expectoration are likewise in the child far from commensurate with the extent of the disease, and hemoptysis loses the value which the investigations of Louis has attached to it in the adult, as it does not occur oftener than once in five times.

It is also difficult in some instances to distinguish tubercular deposition from lobular pneumonia, for, as has already been stated, the locality of the disease will not, as in grown-up persons, afford us any evidence from which the real nature of the consolidation may be presumed. The diagnosis, as stated by Rilliet and Barthez, is founded mainly upon the period\* at which bronchial respiration becomes perceptible, being much earlier in pneumonia than in tubercular infiltration, and less persistent in the former than in the latter. These are, however, it must be allowed, but indifferent rules, and it is to be feared that there are no positive signs by which a sure diagnosis is to be formed. More assistance will be derived in such cases from the history of the attack, and its amenability to remedial measures than from either the stethoscope or rational signs. (15)

We are indebted to Dr. Addison\* for an excellent essay in which he points out

\* Guy's Hospital Reports, April 1845.

the important part assumed by inflammation in all cases of tubercular phthisis. He describes the disease under three separate divisions:—1st. Pneumonic Phthisis; 2d. Tuberculo-pneumonic Phthisis; 3d. Tubercular Phthisis. The first division constitutes one form of what in common parlance is termed “galloping consumption,” and may be either acute or chronic. Of the acute form the author recognizes three varieties, one in which some attempt at reparation is made, as is shown by the presence of gray induration; a second, is that of inflammation arising about the circumference of old induration, and destroying both it and the newly-invaded structures together; the third variety not mentioned.

Of the chronic pneumonic phthisis he admits two subdivisions; one in which old indurations are converted into vomices; another in which the lung is universally invaded by gray induration, but is not disintegrated. We regret that the author should seek further to complicate a subject already sufficiently distant from simplicity, by employing the term phthisis in its etymological sense to a disease which has nothing beyond its fatality in common with that to which the term is limited by common consent. We can see no possible good which can compensate for the confusion which may be produced by bringing under the same denomination the affection above described, which is evidently no more than simple pneumonia, and is strictly unconnected with true tubercular consumption.

Under the title of tuberculo-pneumonic phthisis, is described a common form of the complaint in which although tubercles are present, and the lungs may even be studded with them, the efficient cause of the fatal termination is pneumonic inflammation. The tubercles in these cases are of what Dr. Addison terms the *sthenic* kind, and show little disposition to soften.

The third form of Tubercular Phthisis is the disease properly so called, and of which tubercles of the *asthenic* kind form the essential element. In these cases excavations arise from the softening of the tubercular matter itself, and independently of the destruction of the pulmonary tissue. The author concludes his communication by an examination of the several forms of thoracic disease which may be mistaken for phthisis. These are chiefly:—1. Recent pneumonic inflammation on the upper lobes of the lung; 2. Various forms of pulmonary induration; 3. Pneumonia in the third stage; 4. Simple bronchitis confined to the upper lobes; 5. Dilated tubes; 6. General or partial pleuritic effusion; 7. Pulmonary apoplexy; 8. Malignant disease of the lung.

*Antagonism of Phthisis and Intermittent Fever.* This remarkable fact first pointed out by M. Boudin has received further confirmation from the observations of MM. Triber,\* Wolheim, Mayer, Gouze† and Wæmer‡. M. Fourcault,§ on the contrary, who appears to have examined this affection in a truly philosophical spirit, has come to the conclusion opposed to M. Boudin, that phthisis and intermittent fever are not mutually exclusive, and that if they sometimes appear isolated, they as often co-exist.

In the treatment of phthisis M. Cossy|| recommends the exhibition of alkalies, combined with the inhalation of ammoniacal vapours, and M. Forget¶ the recurrence to the ancient remedy, opium. The former, it may be observed, is an unimportant modification of the method proposed some years back by Dr. Campbell, and has been found by Louis equally inefficacious with all other boasted remedies.

14. *Tubercle.* The anatomical site of the deposit is thus stated by various late writers:—

It is considered to be generally deposited in the elastic cellular tissue of the lungs, less frequently in the air vesicles, and capillary bronchial tubes, by Lebert;\*\* in every structure which enters into the composition of the lungs, in

\* De l'heureuse Influence de l'Atmosphère marécageuse sur la Tuberculisation, Paris, 1844.

† Schmidt's Jahrbücher, 1845, No. II. 451 Band, 2 Heft, p. 169. ‡ Ibid.

§ Causes Générales des Maladies Chroniques, 8vo. Paris, 1844.

|| Archives Générales de Médecine, Dec. 1844.

¶ Bulletin Général de Thérapeutique, Dec. 1844.

\*\* Muller's Archives, No. 2 and 3, 1844.



the coats of the pulmonary artery, in the walls of the bronchial tubes, in the air cells, and upon and under the pleura, by Sibson;\* in the interior of the pulmonary cells and the minute bronchial tubes, by Nicolucci and Mr. Rainey.† Tubercle is considered to be a modified form of albumen by Evans‡ and Bennett;§ to have no analogy to pus, by Lebert, or to fibrin, by Rainey. According to the observations of the latter writer, tubercle may be distinguished from fibrin by an examination of the neighbouring capillary vessels. Those adjacent to tubercle retain their natural character, those, on the contrary, which are seen in the vicinity of a fibrinous deposit, are tortuous and varicose. These observations, it may be remembered, are to a certain extent at variance with the researches of Guillot and Van der Kolk mentioned by Louis, (*Walshe's Transl.* p. 29,) namely, that the branches of the capillary pulmonary vessels, so far from being natural, stop short, as they approach tubercular deposit, leaving a space of about two lines in breadth, which for a time at least remains perfectly destitute of vascularity.

The inflammatory origin of tubercle is maintained by Bennett, Evans, and Sibson; denied by Nicolucci|| and Lebert. We have thus, it appears, made no nearer advances to the settlement of the question. The doctrine of the inflammatory origin of tubercle has, however, always appeared to us untenable; for, setting aside the objections arising out of the relative topographical statistics of this product, and those of inflammation, as established by Louis, there are others to be adduced, which it is equally difficult to reconcile with the doctrine. Tubercle undoubtedly exists as such in the blood; it must therefore either coexist with the fibrin, or be supplementary of it. The latter supposition is entirely negatived by the researches of Andral and Gavarret, which demonstrate that the blood of phthisical patients contains more fibrin than that in any other disease, the pure phlegmasiæ excepted. We must therefore, of necessity, admit their co-existence in the blood. This being granted, the question of the origin of tubercle as far as inflammation is concerned, is reduced within very narrow limits. Either the same vital action, i. e. inflammation, existing in capillary vessels, which are separated from each other by inappreciable distances, is capable of giving rise, at the same time, to two totally different products, namely, tubercle and fibrin,—or we must conclude that these products originate in a different vascular action. In other words, we must believe, if we hold the inflammatory theory, that the tubercular deposition, and the chronic induration in its immediate vicinity, the latter a pure fibrinous exudation, are the result of the same action in contiguous capillary branches. Now, although we do not maintain that it is impossible, we must yet hold that it is improbable that, when the blood holding both the fibrin and tubercular matter in solution, arrives at the site of two given capillaries—one supplying one cell, the other the next—these vessels should be capable of exercising a kind of elective affinity; and one under inflammation, allow the exudation of tubercle—the other, of the true blood-plasma. The difficulty is only to be avoided upon the supposition that of these two processes, namely, tuberculization and pneumonic exudation, going on, as they assuredly do, at the same time, the latter alone is inflammatory, the other is the product of some other kind of vascular action, most probably that which in healthy subjects is subservient to normal nutrition.

On the subject of the general pathology of tubercle, we may direct attention to a memoir by Dr. Cless,¶ to another by Engel,\*\* and to the researches of Lebert, before alluded to, the summary of which will be found in our Abstract (35.)

15. *Asthma.* Mr. Harrison†† has recommended a trial of the fumes of nitrate of potash, in spasmodic asthma, during the paroxysm. The room which the patient occupies is to be filled with the fumes by burning paper which

\* Op. cit. P. 470 et seq.

† Paper read before the Medico-Chirurgical Society, March 25, 1845.

‡ Op. cit.

§ Vide Abstract, art. 14.

|| Encyclographie des Sciences Médicales, Janv. 1845.

¶ Beiträge zur Pathologie der Tuberculose. (Rose's Wunderlich. Archives, III, iv.) Schmidt's Jahrbücher, No. ii, 45 Band, 2 Heft.

\*\* Ibid. No. iii, 3 Heft.

†† Lancet, April 5, 1845.

has been dipped in a saturated solution of the salt. This suggestion is not new, the plan having been some time since adopted in America; it is however, worthy of attention, from the facility with which its powers may be tested.

16. *Black Pulmonary Matter.* The dark-coloured deposit which is frequently found in the respiratory organs of old persons, has been minutely investigated by M. Guillot,\* without, however, his having contributed much to the elucidation of the subject. The appearance in question was, it is well known, first described by Laennec, and was by him, as well also as by many subsequent writers, attributed to the inhalation of carbonaceous matters. In the cases which are referred to by the author, this opinion could not be entertained, as the patients had never been exposed to circumstances under which the inhalation of such matters was likely to occur. The theory which is favoured by M. Guillot, is that which was long since enunciated by Dr. Carswell, (*Cyclopæd. Pract. Med.* — Art. *Melanosis*), namely, that it is due to stagnation of the blood in the pulmonary tissues. This view of the case is supported by the consideration, that the instances in which this discoloration of the lung is found, are exactly those in which we should *a priori* expect the pulmonary circulation to be liable to congestion and stagnation; namely, in the old, and in persons whose lungs are emphysematous. Although this black deposit is a physiological rather than a pathological change, it is capable, when it occurs in great abundance, of producing serious mechanical inconvenience, by obstructing the capillary vessels and respiratory canals. The remarkable property possessed by this matter, as stated by M. Guillot, is its power of inducing a modification in tubercular matter. He believes that it operates as a spontaneous check to the further deposition of that product, by obliterating the new system of capillary vessels, which, he has observed, replaces the obstructed capillaries of the pulmonary artery.

17. *Empyema.* This subject has met with a considerable share of attention of late, more particularly in reference to the operation of paracentesis. Upon the safety and propriety of this operation, the profession is still as much as ever divided; some maintaining the opinion of the late Dr. Hope, that all cases which are curable with, are also to be cured without it; others holding an intermediate opinion, that it is only to be advised as a dernier resort, to avoid impending suffocation; others, again, contending for its positive utility as an early procedure. Among the supporters of the latter view, Dr. Hamilton Roe is pre-eminent, having furnished us with a valuable essay, which will be found in a condensed form in the preceding part of this work (16,) and the object of which is to show, by numerical proof, that the operation is both safe and advisable, whenever the fluid either fails to be absorbed, or is clearly ascertained to be purulent. For a more detailed account of the author's practice, in order to avoid repetition, we refer our readers to the Abstract, premising that, although we cannot entirely agree with him in the favorable views which he takes of the operation, we must admit that he has placed it before the profession in a far more enticing shape than had been done by any preceding writer.

Among other information connected with the subject of paracentesis or empyema, we may mention a report of four cases operated upon by M. Roushille,† three of which were fatal; and of three performed with success by M. Trousseau‡ in the last stage; Dr. Dorup§ also speaks of it in favorable terms, and M. Lutjaerens|| has reported a case in which a cure was obtained under the most unfavorable circumstances by the injection into the pleura of a weak solution of iodine.

Dr. M'Donnell¶ has remarked the existence of a peculiar crepitation in the lungs after the absorption of pleuritic effusion. The sign he endeavors to ex-

\* Archives Générales de Méd., Janv. Fev. Mars. 1845.

† Journal de Médecine de Bordeaux.

‡ Acad. Royal de Méd., Séance Mai 26, 1845. Reported in Archives Générales de Méd. Av. 1845.

§ Paper read before the Scandinavian Naturalist Society, from Bibliothek fur Læger, by Dr. Otto, 1844.

|| Gazette des Hôpitaux, Feb. 6, 1845.

¶ Dublin Journal, Jan. 1845.

plain upon the supposition that it depends upon the entrance of air into the lung which had been compressed, and which from its compression has also become oedematous. This view of the phenomenon has subsequently been supported by Dr. Ojier Ward,\* having been called in question, as it appears very justly, in the editorial remarks of the *Lancet*, and there referred to that class of sounds which are known to be produced by the contact of roughened serous surfaces. Whatever be the true theory of the production of this phenomenon, Dr. M'Donnell is not the first to notice it, as it has been long since alluded to by Gendrin, and more recently by M. Damoiseau. (*Archives Générales de Médecine*, 1843.)

18. *Pneumonia*.—On the pathology of this disease the only remarks worthy of record are those of Mr. Sibson, contained in the valuable paper above alluded to, and those of M. Prus.\* The essential and primary seat of the disease is stated by the former writer to be, the capillary branches of the pulmonary artery and vein, the coats of which vessels become, through a "modification in their cell-life," soft and yielding. He agrees with Stokes in discriminating a stage prior to this, in which the minute crepitating bile is observed, and which is recognized by an increased and hissing vesicular respiration. M. Prus, in the memoir above alluded to, has examined the different theories upon the subject of the primary seat of pneumonia with great minuteness. After criticising the opinions of Laennec, Andral, Lobstein, Grisolle, and other French writers, he pronounces his adherence to the opinion which has been previously somewhat indefinitely stated by Lallemand, that pneumonia is essentially an inflammation of the intervesicular cellular tissue, and does not necessarily involve any lesion of the bronchial tubes or air-cells.

In the treatment of the suppurative stage of pneumonia the iodide of potassium is much praised by Dr. Upshur. We have frequently had occasion in practice to witness the advantages which the author attributes to this remedy, particularly in the pneumonia of infants, as it occurs during the progress of or immediately after measles. (19)

#### § IV.—Diseases of the Circulating System.

19. *Diseases of the Heart*. The contributions to the study of the diseases of the heart and great vessels during the preceding six months are principally those by Drs. Bellingham, Furnival, and Christison, and MM. Forget and Gendrin. The observations of Dr. Bellingham, which will be found at length in another part of this work (19), are valuable for the clearness with which the physical signs of valvular disease in particular are laid down. In common with the majority of auscultators, he considers regurgitant diseases of the mitral valve to be indicated by a "bruit" with the first sound, most distinct under the left nipple. In regard to this point we may be allowed to state, that it has long been our opinion, founded upon careful clinical observation, that disease of the mitral valve does not give rise to any bruit whatever, and that, in fact, we have no mean of diagnosing the lesion, excepting by reference to the pulse, which is in itself almost pathognomonic. In looking lately through a list of cases of mitral valve disease, we have been able, within certain limits, (not as extensive as might be wished, it must be allowed,) to gain a numerical confirmation of these views. Of 14 cases of mitral disease, as ascertained by post-mortem examination, a bruit with the first sound existed in 8, and none in 6. This at first sight might appear to favour the common opinion; but we further find, that out of these 8 cases, another cause capable of generating the "bruit," namely, obstructive disease of the aortic valve, existed in 6. On the other hand, in the 6 cases of patulous mitral valve in which no bruit was perceptible, neither was there, with one exception, any coexistent disease of the aortic orifice. The exception alluded to, it may also be observed, is not in reality one to which any value can be attached, for the aortic orifice was in that case reduced to a rigid narrow ring, a condition which is generally allowed to be incapable of generating a bruit. We

\* *Revue Médicale*, Avril, 1845.

conclude, therefore, as far as so small a number of observations will warrant our coming to any deduction at all, that a patulous condition of the mitral valve does not give rise to a "bruit," but that the sound heard in such cases is due to a co-existing lesion of the aortic orifice.

Dr. Furnival's work\* is a careful resumé of the ordinarily received doctrines of the day, but adds little to our previous knowledge. He particularly insists upon the advantage of giving alkalies in the treatment of acute rheumatism, as a means of preventing cardiac complication. The formula preferred by him is:—*Liq. potassæ* 3ss; *Vin. colchici* ℥ xx; *Infus. sennæ*, or *Aquæ menthæ* ℥j three times a day. He likewise speaks highly of aconite as a sedative in heart disease, and considers it in all cases preferable to digitalis.

M. Forget† considers that too much value is attached to valvular sounds in the diagnosis of diseases of the heart. He thinks that, in order to arrive at a correct diagnosis, it is necessary to determine the relative frequency of the lesions of the different orifices, and the relations of those lesions to hypertrophy and dilatation of the parietes. The results of the analysis of several hundred cases has shown him, that the most conclusive sign of a contracted aortic orifice, is dilatation, and generally also hypertrophy of the left ventricle. This is indicated by bulging in the præcordia, increased impulse, and bellows-sound along the track of the aorta. This state of the left ventricle implies also passive dilatation of the other three cavities, so that in diseases of the aortic orifice the whole heart is enlarged, giving rise to increased dull space in the præcordial region. Contraction of the mitral orifice is followed by dilatation of the three cavities behind it, but the left ventricle remains undilated. In this case there is neither præcordial bulging, nor increased dullness on percussion.

The practical deductions drawn by the author from these views are,—that in aortic stricture, with hypertrophy and dilatation of the left ventricle, debilitants and sedatives may be used without fear; whereas, in cases of mitral stricture, these means must be used with caution, as the left ventricle not being thickened, requires all its energy.

20. *Pericarditis*. The occurrence of this disease as a complication of scarlatina, has already been mentioned (vide p. 3.) Mr. Sibson‡ speaks of a mild form of pericardial inflammation, which he believes to occur some time or other in the life of almost every individual. He is induced to come to this conclusion from finding a small quantity of fluid, and a delicate fibrinous deposit on the auricular appendages in the majority of post-mortem examinations in persons dying of lingering disease of the chest, injuries, &c., which came under this notice.

21. *Aneurism*. The diagnosis of aneurisms of the aorta forms the subject of a comprehensive paper by M. Gendrin, for which we refer to a former part of this work (22), and is also briefly alluded to by Dr. Furnival.§

A peculiar form of dissecting aneurism of the aorta has been described by Dr. M'Donnell,|| in which the blood had taken a double course, one downwards behind the sigmoid valves, which eventually burst into the pericardium, the other upwards separating the arterial tunics as far as the innominate and subclavian vessels. The symptoms of this lesion are well shown in a similar case which is recorded by Dr. Todd in the 27th vol. of the *Medico-Chirurgical Transactions*. These appear when the disease occurs suddenly, to be in the first place, a state of syncope, which is evidently due to the sudden abstraction of a large quantity of blood from the general circulation, and its impulsion into the new-formed channel. The tearing away of the cellular tissue connecting the coats of the artery before the column of blood, was in the above case announced by a severe anomalous pain in the course of the arterial trunk.

#### § V.—Chylopoietic System.

22. *Liver. Cirrhosis*. Dr. Corrigan insists upon the necessity of paying attention to the early symptoms of this disease, as it is in the initiatory stage only

\* *Diagnosis, Prevention, and Treatment, of Diseases of the Heart, &c.* 8vo. London, 1845.

† *Memoir to the Acad. des Sciences Médicales.* Reported in *Lancet*, Nov. 1844.

‡ *Op. cit.* p. 522.

§ *Op. cit.* p. 176.

|| *Medical Gazette*, March 2, 1845.

that remedial measures can effect any permanent good. The affection is ushered in by repeated attacks resembling "cholic," which are apt to come on after meals, with pain at the top of the shoulder, vomiting, more or less jaundice, and occasionally slimy stools tinged with blood. In the treatment of this condition of things, nothing can be done without total abstinence from ardent spirits and other stimulating liquors, which the patient is prone to indulge in, under the impression that they will relieve the colicky pains by which he is harassed. In addition to this, Dr. Corrigan advises cupping or leeching over the hypochondrium, and the exhibition of mercury until gentle ptyalism is established. When this has been maintained for two or three weeks, we may have recourse with great advantage to this trisnitrate of bismuth. (24)

23. The causes and treatment of *biliary calculi* are thus stated by MM. Duparcque and Dufresne.\* The causes are the phlegmatic constitution, sedentary habits, too animalized a diet, and the prolonged sojourn of the bile in the gall-bladder. The treatment, according to the authors, is to be conducted upon three principles:—1st. To dissolve the concretions; 2d. To facilitate their expulsion; and 3d. To induce such a modification in nutrition as shall prevent their recurrence. In order to fulfil the first indication, alkalies, and especially Vichy water, are the authors' favourite remedies. The second indication is attempted by the exhibition of a mixture of two parts of spirit of turpentine and three of ether; or by one of castor oil of sixty parts, ether four parts, and sugar thirty parts, the dose being a teaspoonful every hour. The two remedies which are so much depended upon in this country, namely, opium and the warm bath, are not alluded to. The method of carrying out the third principle of treatment is determined by the manner in which the gall-stones are formed. This in the belief of the authors is by the conversion of the fatty matters, and they accordingly recommend abstinence from food rich in oleaginous principles, combined with purgatives, vegetable diet and exercise.

24. That condition of the liver which is familiar to us under the name of *nutmeg liver*, has recently been submitted to microscopical investigation by Vogel.† The researches of this observer confirm the ordinary opinion that the appearance is caused by irregular congestion of the organ, and shows that it depends directly upon the contrast exhibited between the pale substance of the hepatic lobules, and the intensely reddened interlobular tissue.

25. A case is described by Dr. Frey‡ under the denomination of inflammation of the vena porta, in which the symptoms were those of phlebitis in general, with the exception that delirium did not occur until the agony of death. This circumstance is accounted for by the author, upon the supposition that the pus did not gain access to the general circulation, being stopped in the portal capillary vessels. The case was fatal, and after death pus was found in the mesenteric, splenic, and in the veins in general which contribute to form the portal circulation.

26. *Abdominal Pulsation*. This is a symptom of very frequent occurrence in practice, and as it is one which never fails to awaken feelings of alarm in the mind of the patient, it will be advantageous to have a clear recollection of the various circumstances under which it may arise. These are well described in an article by Dr. Nottingham, to which the reader is referred. (27) As far as our own experience goes, it is nine times out of ten an unimportant symptom, and is readily subdued by the nitrate of silver in  $\frac{1}{4}$  grain doses, or by the bicarbonate of potash and hydrocyanic acid. The theory of the production of the pulsation is not in all cases very evident, but in those cases in which it is complained of by the patient without being perceptible to the medical attendant, it is probably due to an exalted state of nervous sensibility of the stomach, whereby the pulsations of the subjacent aorta, ordinarily unnoticed, become more or less plainly perceived.

\* *Recherches sur la Digestion*. In *Annuaire de Thérapeutique*, 1844.

† "Erläuterungstafeln zur pathologischen Histologie." Translated by W. Kirkes, Esq., *Medical Gazette*, May 16, 1845.

‡ *Heidelberg Annalen*, t. x, 2, 1844, in *Schmidt's Jahrbücher*, No. 1, 1845. P. 33.

27. *Stomach. Perforating ulcer.* A case of this lesion is reported by Dr. Barlow,\* which is chiefly worthy of mention in consequence of having given rise to a peculiar condition of parts calculated to throw great obscurity over some of the phenomena of auscultation which are in general the least liable to misconception. The contents of the stomach being extravasated through a circular ulcer, instead of giving rise to a general peritonitis, excited only a circumscribed inflammation, so that a large cyst or abscess was formed communicating freely with the stomach. The contractions of the diaphragm in this case causing the passage of air from the stomach to the adventitious cavity, and vice versa, gave rise to many of the symptoms of pneumothorax with pulmonary fistula, such as amphoric resonance, metallic tinkling, &c., so that during life the pleural sac was considered to be the part chiefly involved. The case is well reported, and together with the remarks of Dr. Barlow is deserving of attentive perusal.

28. *Intestinal obstruction.* There are few circumstances in which the diagnostic acumen of the physician is more frequently put to the test, than in the discrimination of the exact site of disease in cases of internal obstruction of the bowels. This difficulty may be in some cases materially diminished by the application of certain observations lately published by Dr. Barlow.† This author has noticed that a difference is to be found in respect to the urinary secretion, according to the seat of the obstruction. When this is situated in the lower part of the intestinal tube, the renal secretion is little, if at all affected; but when it is higher up, near the duodenum, the secretion has been observed to be more or less completely suppressed. The explanation of this phenomenon is to be found in the fact, that if the obstruction be high up, a small quantity only, or no fluid at all can gain access to the intestines; and absorption is consequently in the same proportion prevented. If the fact be one of general occurrence, Dr Barlow will have rendered material service to the department of diagnostics, by his notice of it.

The large intestine has several times of late been opened in the lumbar region, as a remedy for insurmountable obstipation. The latest case on record is one by Mr. Evans of Derby, making the eleventh in which Callisen's operation, as modified by Amussat, has been performed in the adult. This patient recovered from the immediate effects of the operation, but died in consequence of subsequent imprudence.

29. *Dysentery.* A severe form of epidemic dysentery has lately been observed in a union house near Tunbridge Wells, in which the mortality has been as high as one case in four. All methods of treatment appeared to be unsuccessful, until it occurred to Dr. Wilmot to exhibit creosote enemata in the strength of 3j to ℥ xij of starch. Under this plan a rapid amelioration took place.‡

30. *Peritoneum.* Dr. Spittal§ mentions a phenomenon attending peritoneal inflammation, which although known as far back as the time of Laennec, has not much attracted the attention of succeeding pathologists. This is a friction sound, analogous to those produced in the pleura and pericardium, and, as in those membranes, depending upon the contact of inflamed serous surfaces. The mechanism by which the peritoneal friction sound is produced is threefold: 1, The respiratory movements and descent of the diaphragm; 2, Pressure on the abdominal parietes by the hand; and 3, the peristaltic action of the intestinal canal. The subject is worthy of deeper investigation than has hitherto been accorded to it, as it is likely to prove a valuable auxiliary source of diagnosis, not only in peritoneal inflammation, but in cases of abdominal tumour.

#### § VI.—Genito-urinary System.

31. In this branch of pathological study we have to notice the recently published and excellent work of Dr. Golding Bird, the object of which is to supply, in their simplest form, the rules for the discrimination and treatment of the vari-

\* Medical Gazette, May 3, 1845.

† Gay's Hospital Reports, October 1844.

‡ Medical Gazette, May 23d, 1845.

§ London and Edinburgh Monthly Journal, May 1845.

ous forms of urinary deposits. As we have in a former part of this work (38) given an abstract of many of the principal matters contained in the work, we shall merely take a passing survey of its contents in the present place, directing the attention of our readers more especially to the treatment. In the remarks upon the management of the deposits of uric acid and its compounds, we do not find much to arrest our attention, the rules there laid down being, for the most part, such as have long been familiar to the profession. The author, however, introduces one or two observations which are deserving of farther publicity. One of these is in reference to the common practice of exhibiting soda as an antacid. On this subject he cautions us that in many constitutions the continual use of alkaline carbonates is productive of much disorder, and refers to the opinion of Prout, that it occasionally induces the formation of the oxalic diathesis. The other observation to which we allude is with regard to the use of the bihydrate of soda, which Dr. Bird states cannot be given to females with impunity, as it has been known in two instances to induce abortion.

The most valuable portion of the work is undoubtedly that which treats of the oxalic diathesis; for we have in the chapter devoted to the subject a development of that particular pathological state such as had not previously been accomplished. This diathesis appears from the investigations of Dr. Bird to be far more common than is supposed, and gives rise to a train of symptoms, which may readily be mistaken for hypochondriasis or spermatorrhœa, with which latter malady it is often associated. Dr. Bird demonstrates, as it appears to us very satisfactorily, the non-dependence of this diathesis upon the presence of sugar in the system; for neither on the one hand has he found oxalate of lime deposits in diabetic urine, nor sugar on the other in that which contains the oxalate of lime. The origin of the salt he considers to be by the conversion into oxalic acid, by the vital chemistry of the kidney, either of urea, or of the elements which in a state of health would have produced that substance. In the treatment of this state of system, the author speaks very favorably of colchicum: but the principal indications are those of strengthening the digestive powers, and to induce a healthy action of the skin, which are readily accomplished by the mineral acids, the sulphates of zinc and iron, and the shower-bath.

32. *Albuminuria.* The most important notice which this disease has received during the preceding six months is to be found in the admirable clinical lectures of Dr. Corrigan,\* who considers the pathological condition of the kidney to be analogous to that which is known as it occurs in the liver, by the term *cirrhosis*. The first stage of the disease consists in a state of hypertrophy, caused by the deposit of lymph, not, as has been supposed, in the tubular structure of the kidney, but in the intervening cellular tissue; the second stage, as in the liver, is marked by contraction. These two conditions, according to Dr. Corrigan, are widely different as to curability: the latter is perfectly irremediable; the former may be removed by judicious treatment. The symptoms are also, he observed, sufficiently distinctive to enable us to recognize the two stages. In the hypertrophied kidney "the urine is abundant, sometimes tinged with blood, albuminous, specific gravity but little altered, with dry skin and pains in the loins. If in addition to this the specific gravity is low, 1.010, and albumen is still present, there is little doubt that contraction has set in, and the prognosis is correspondingly unfavorable.

M. Fourcault,† in a work recently published upon the causes of chronic diseases in general, gives the following rationale of the occurrence of albuminuria. He had long observed that the presence of albumen in the urine, in by far the majority of cases coincided with notable derangement of the functions of the skin. Struck with this circumstance, he had recourse to experiment to determine whether the two events had any necessary connection. The result was, that in artificially suppressing the cutaneous transpiration, he induced albuminous urine. The explanation of the fact is founded upon the hypothesis that the albumen

\* Medical Times, April 15th, 1845.

† Causes Générales des Maladies Chroniques, &c., Paris, 1844, and Revue Médicale, Avril, 1845, p. 826.

of the blood is retained in a fluid condition by a chemical union with soda, which alkali is neutralized by the lactic acid retained in the circulation in consequence of its non-elimination by the skin. The albumen thus isolated is rendered as it were an effete element, and is therefore, discharged by the kidney as the most active emunctory of the body. The feasibility of this theory is, according to the author, supported by further experiments, in which he injected lactic acid into the veins of different animals, with the constant effect of causing the appearance of albumen in the urine. These observations which are for the most part in accordance with the views of Mr. Ross\* upon the same subject, are deserving of close attention, for they, if true, entirely subvert the opinion of the illustrious physician whose name has by common consent been accorded to the disease for the elucidation of which he has done so much. In fact, if the skin have in reality so great an influence upon the appearance of albumen in the urine, we must undoubtedly cease as hitherto to regard the congestive or inflammatory lesion of the kidney as of primary consequence in the causation of the disease. We, however, look upon this branch of pathological inquiry as far from being satisfactorily determined. We know thus much, that there exists a train of symptoms indicating a generally fatal combination of pathological conditions, but of the three main elements of the disease in question—the presence of albumen in the urine, the appearance of dropsical effusions, and the concomitant lesions of the kidney: we are not able, as it appears to us, as yet to determine the respective place in the series of morbid actions.

The treatment of albuminuria will be found to be well described by Dr. Williams. (30) In the early stage of the disease in which there is usually more or less pain in the back and loins, local abstraction of blood by cupping will be found of material benefit. The dropsical symptoms may be attacked by hydragogue cathartics, diaphoretics, &c. Diuretics are, according to Dr. Williams, unsafe until the renal congestion has been in a measure removed. In the chronic form of the disease, Rayer recommends small doses of tincture of cantharides, and Mr. Kidd,† the establishment of an issue in the loins. We regret that we do not find more specific notice of the treatment of some of the more urgent symptoms attendant upon that fatal malady; as for instance, of the vomiting which in many cases forms so insurmountable an obstacle to the administration of medicines, and by the rejection of all food tends mainly to the fatal determination. On the subject of treatment of albuminuria as it occurs after the eruptive diseases, we have already had occasion to remark in a former part of this Report.

### § VII.—*Diseases of Uncertain Seat.*

33. *Scrofula.* The most recent, and, at the same time, the most important communications with respect to this common source of the deterioration of the human species, are to be found in the late work by M. Lugol, of which we have had the honour of producing an English translation.‡ The object of this work is strictly confined to the investigation of the causes of the disease, the author having, as he conceives, sufficiently exhibited his method of treatment in former publications. The main peculiarity in the author's views consists in the great development which he has given to hereditary influences in the causation of the disease, and the small share which he believes external agents to possess, when hereditary taint is not also present. No combination of circumstances in fact can, according to him, make a healthy man scrofulous. These views are unquestionably startling, from the implicit faith with which we have been accustomed to receive the doctrine of the influence of impure air, and bad food, in the production of scrofula; and it is to be regretted assuredly that the author had not followed the philosophical Louis in the mode in which he has related the results of his investigation. Now, although it is not our intention to defend M. Lugol from the accusation of inexactitude with which many of his dicta have been received,

\* *Lancet*, August, 1844.

† *Dublin Medical Press*, Jan. 15, 1845.

‡ *Researches and Observations on the Causes of Scrofulous Diseases*: London, 1844.



we must be allowed to suggest that assertions coming from the lip of a man who, like Lugol, writes a book not to get a name, but at the end of a thirty years' experience, and on the point of retiring from the profession, might be received with a less amount of the support afforded by figures than under other circumstances we should require. The author, among other points, in which he differs from preconceived opinions, states as his experience, that scrofula is most frequently shown in persons with dark hair and complexion. "Scrofula," he observes, "rarely shows itself in persons of light hair and complexion; more than half are dark, and among the remainder the hair is generally of various shades of auburn." As far as our own observations have gone, and we have, since our attention has been so directed, made many inquiries in reference to this particular point, they coincide with those of M. Lugol.

The circumstances under which scrofula may be inherited are, as M. Lugol observes, more numerous than is commonly known. Not only may an individual actually labouring under scrofula at the time of begetting offspring, transmit to them his cachectic constitution, but he may do so if he at any time has been scrofulous, even although he should be apparently cured. It appears, also, that even if he have not exhibited signs of scrofula in his own person, his children are nevertheless not exempt, if his brothers or sisters suffer from the disease; for M. Lugol regards it as an axiom, that if one member of a family be scrofulous, the others are so also in a greater or less degree. Phthisical parents may beget scrofulous children; as may also those who are labouring under secondary syphilis; those who marry too early or too late; who are disproportioned in age, or in the physical vigour of the sex; or who have committed venereal excesses. Lastly, scrofula may be inherited from maniacal, epileptic, and paralytic parents. In point of fact, any circumstance which gives rise to debility in the reproductive system in the parent, may become a source of scrofula in the child.

Our space will not allow of a minute analysis of M. Lugol's important work; we shall therefore pass on to a subject which is nearly allied to scrofula, namely:—

34. *Cretinism.* The pathological history of the degenerate races inhabiting the humid valleys of the Alps, has lately been extended by the labours both of British and continental writers; among which, we shall mention those contained in an interesting brochure by Dr. Wells.\* The first part of this work is occupied by a physiological discussion upon the origin of the term *cretin*, and by an account of the authors who have written upon the subject. He then proceeds to the description of a cretin, and to the consideration of the proximate cause of the degeneration. It appears, according to Dr. Wells, that cretinism is not hereditary, but that it shows itself usually for the first time about the period of dentition. In this view, however, he is at variance with Dr. Rösch,† who has likewise minutely investigated the disease. The proximate cause is stated to be "an imperfect development of the individual, dependent upon the condition of the blood, which is deficient both in quantity and quality." The author combats the opinion that cretinism and goitre arise from any peculiarity in the Alpine waters, but agrees with Dr. Rösch, in attributing the condition entirely to the injurious operation of the warm damp atmosphere which stagnates at the bottom of the Alpine valleys. The subject has also been noticed in a paper published in the *Transactions of the Vienna Medical Association*, by Dr. Knolz,‡ and in a work by Dr. Troxter.§

35. *Rheumatism.* M. Legroux|| has for some time abandoned bleeding in the treatment of acute rheumatism, and has relied entirely upon the sulphate of quinine. The effects of this medicine are stated by him to be threefold: 1, primary or local; 2, physiological or secondary; 3, therapeutic. The latter only need here occupy our attention. The action of the circulating system seems especially

\* Essay on Cretinism and Goitre. London, 1845.

† Untersuchungen über der Kretinismus. Erlangen, 1844.

‡ Vide British and Foreign Medical Review, Apr. 1. 1845.

§ Der Cretinismus in der Wissenschaft. Zurich, 1844.

|| Journal de Médecine, Encyclopédie Médicale, Avril, 1845.

modified by the medicine, the heart's pulsations diminishing rapidly both in force and frequency. The skin at the same time cools down to its natural temperature. The articular affections do not undergo any notable amendment before the third or fourth day, but after that day they rapidly progress towards recovery. The following is a statistical statement of M. Legroux's experience:—Of 24 cases, some had been ill two or three days, others for six or seven, some as long as a month; the mean duration of illness at the commencement of the treatment was ten days. The duration of the treatment in the successful cases, was 3 days in two, 4 days in six, 6 days in four, from 8 to 9 in four, from 12 to 15 in two; the mean duration, therefore, was 6 days. Of the twenty-four patients, 19 were completely cured; in fact, this change from disease to health was almost sudden; there appeared to be no intermediate state of convalescence. The other 5 had a relapse, but were eventually cured by the same means.

Of these 24 cases, there was heart complication in 7; but this did not appear to be influenced in any manner by the quinine.

The preceding facts and considerations lead M. Legroux to the following conclusions:—

1. The sulphate of quinine is a powerful sedative of the circulation.
2. It exercises a powerful influence over the duration and progress of articular rheumatism; it diminishes the symptoms; and probably tends more than any other medicine to prevent the intercurrent of cardiac disease.
3. Given in small and divided doses, it is free from all danger and inconvenience.
4. It often succeeds alone; but it is often useful to associate with it one or two bleedings.

36. *Diabetes.* Dr. Watts\* has reiterated his opinion, that the proximate cause of this disease is to be sought in the assimilating organs, and that the kidneys are not essentially implicated in the disease, merely acting as emunctories for the sugar, with which, by a vice in the digestive organs, the blood is surcharged. He shows, on the authority of Liebig, that certain articles, such as sugar, starch, gum, &c., in a healthy stomach, are converted into oleaginous secondary principles, which, like the saccharine, are destitute of nitrogen. A further change is then effected by their being converted into animalized, that is, azotized principles, such as are necessary for the constitution of the various tissues of the body. It, however, happens, under certain forms of disease, that digestion is interrupted in one or other of these stages of assimilation, and effects are produced, which vary according to the particular stage at which the suspension of assimilation takes place. In the case of non-nitrogenized principles, if the assimilation has ceased after the conversion of the saccharine into the oleaginous principles, this imperfectly assimilated aliment is according to Dr. Watts, deposited in the form of fat. Hence, with him, the production of great obesity is one of the precursors of diabetes. If, however, the digestion has not proceeded further than the conversion of the amylaceous matters into the saccharine principle, this remains as an effete matter, and is eliminated by the kidneys and in the alvine discharges. The peculiarity of the views of Dr. Watts, then, consists in his regarding diabetes as made up of three stages: the first, which is essential, and consists in inflammatory gastric dyspepsia, as a consequence of which, the conversion of the non-azotized into the azotized principles is incomplete; the second, which is not essential, and is therefore occasionally absent, in which, from the mal-assimilation of the oleaginous principles, these are deposited in the form of fat; and thirdly, that which is generally recognized as diabetes, in which the digestive process gives rise to a low form of sugar, but is incapable of accomplishing its further assimilation. This supposed connexion of obesity with subsequent appearance of diabetic symptoms, is worthy of further investigation, but we are not aware that it has been insisted upon by any other writer.

In the treatment of diabetes we refer with gratification to a paper by Dr. Imray,

\* *Lancet*, April 19 and 27, 1845.

(37) in which the influence of warm climates upon the disease is shown to be of paramount importance. A subsequent article likewise contains the report of a case supposed to have been cured by the Peruvian balsam. (38)

37. *Action of Medicines. Narcotics.* Dr. Pickford,\* of Heidelberg, has made the *modus operandi* of narcotic medicines the subject of a valuable inaugural dissertation. His conclusions may be thus briefly recapitulated:—

1. A narcotic becomes active only when it enters the circulation.
2. It enters the circulation through the medium of the veins, and not by the lymphatics.
3. Since it is impossible to detect the narcotic either in the blood, or in any component part of the body, it must be allowed to have a special effect upon the nervous mass, the blood being simply the vehicle of the poison.
4. The action of a narcotic differs sensibly, accordingly as it acts directly upon the nervous centres, or only upon a particular nerve.
5. A powerful dose of narcotic poison destroys life by a direct action upon the nervous centres; in smaller doses it kills by its action upon certain nerves, as those of the heart.
6. The nearer the nervous centres that a narcotic poison enters the circulation, the more rapid the death.

*Diuretics.* In the explanation of the *modus operandi* of diuretics, Dr. Bird† alludes to the two following laws:—1st. That substances intended to reach the kidneys must either be in solution, or be readily soluble in the fluids contained in the stomach. 2d. That the solution of these substances must be so diluted as to be of considerably less specific gravity than the liquor sanguinis or serum, i. e. less than 1.028. This strikes us as an important law, and one which is not sufficiently attended to in extemporaneous prescriptions. It readily explains why two drachms of the acetate of potash in a given quantity of water will excite diuresis, while half an ounce in the same quantity will purge. The author has made some remarks upon the laws which are specially worthy of recollection. After alluding to the course which diuretic medicines must take before they reach the kidneys, viz., through the liver and ascending cava to the heart, and thence through the lungs back to the heart, and through the aorta, he observes that when an obstruction exists in any part of this course, a diminished supply of water reaches the kidney. For example, a patient labours under a contracted condition of one of the auriculo-ventricular openings, and dropsical effusions ensue, or he has a contracted liver, and the portal system is consequently obstructed. In cases of this kind no good can arise from goading the kidneys by diuretics, unless the obstruction can first be remedied. This is a point not sufficiently reflected upon in practice, or we should not see stimulating diuretics, as *cantharides* and *squills*, so promiscuously given in dropsy, without reference to the condition of the heart and liver. Dr. Bird concludes with these practical suggestions:—

1. Whenever it is desirable to impregnate the urine with a salt, or to excite diuresis by a saline combination, it must be exhibited in solution so diluted as to contain less than five per cent. of the remedy, or not more than twenty-five grains in an ordinary draught. The absorption of the medicine may be ensured by a copious draught of water or other diluent, immediately after each dose.
2. When the urine contains purpurine, or other evidence of portal obstruction exists, the diuretics employed should be preceded or accompanied by mild mercurials, *taraxacum* or other cholitic remedies.
3. In cases of valvular disease of the heart, it is next to useless to endeavour to excite diuretic action by remedies intended to be excreted by the kidneys. The best diuretics will be found in whatever tends to diminish the congested state of the vascular system, and to moderate the action of the heart; as *digitalis*, *colchicum*, and other sedatives, with mild mercurials.

38. *New remedies.* Some few new medicines have lately been introduced to

\* Archives für Physiologische Heilkunde.

† Op. citat. p. 233 et seq.

the profession which we shall briefly notice. The principal of these are the arseniate and the valerianate of quinine and bebeerine.

The *Arseniate of quinine* has been introduced by M. Bourrieres,\* and is intended by him to be a substitute for arsenious acid, in cases in which that poison is exhibited as an anti-periodic.

The *Valerianate of quinine* has been tested by M. Devay† at the Hôtel-Dieu. Its virtues, as ascertained by him, are said to be considerable in those cases in which a combined sedative and tonic effect is required. It is, therefore, serviceable in low forms of fever with nervous excitability; in intermittents of bad character, and in neuralgic and hysterical complaints.

*Bebeerine* is a name applied to a salt extracted from the *Noctandra Rodiei*, nat. or. Lauracæ, which has been found by Dr. Lagan‡ to possess anti-periodic properties of a high order, and is stated by him to be only half the expense of quinine. He records the experience of Dr. Watt of Demerara, and Dr. Nicholson of Madras, both of whom have exhibited it in intermittent and neuralgic diseases of various intensities, and who concur in the statement that it is certainly free from those unpleasant consequences, as headache, deafness, &c., which occasionally supervene upon the use of quinine.

We thus bring to a close our Report for the preceding six months, but in doing so we shall in the last place mention the titles of several papers and essays, which though not there alluded to, are worthy of perusal:—

On the changes in the urine effected by disease, and the tests to distinguish them. By E. I. Sherman, M.D. (*Lancet*, May 17, 1845.)

Observations on the reflex actions of paralytic limbs. (By W. T. Barlow, Esq. *Ibid.*, April 12.)

On the advantages to be derived from increased accommodation for the insane, &c. By E. Rowley, Esq. (*Provincial Medical Journal*, May 14.)

Practical observations on some of the more important points in physical diagnosis. By C. Durrant, M.D. (*Ibid.*, Dec. 1844, et seq.)

(An excellent resumé of the advanced state of the knowledge of auscultation in the present day.)

A critical analysis of the principal facts of disease. By H——. (*Ibid.*, Nov. 1844, et seq.)

Pathology of Expectoration. By Dr. Wright. (*Medical Times*.)

The structure and functions of the brain, with new views on the nature, causes, and treatment of mental diseases. By M. Pinel and Dr. Costello. (*Ibid.*, March, et seq.)

Lectures on skin diseases. By Dr. Corrigan. (*Ibid.*, April, et seq.)

\* Bulletin des Académies, Avril 1845.

† Bulletin de Thérapentique, Nov. 1844.

‡ Edinburgh Medical and Surgical Journal, April 1845.

## II.

## REPORT ON THE PROGRESS OF SURGERY.

BY HENRY ANCELL, ESQ. M.R.C.S.E.

No observer can doubt that Surgery is making rapid progress. While on the one hand new operations are successively discovered for the cure of pathological lesions hitherto deemed irremediable, as the operation for the cure of strabismus, and the subcutaneous section in tenotomy: on the other hand, operations by the knife are superseded by a more rational and scientific, a less objectionable and equally successful treatment of the disease: as in the probable substitution of pressure for incision in the cure of some cases of aneurism. Again, surgical operations which proved unsuccessful and were abandoned in despair in a more infantile period of the art, are now likely to be resorted to successfully in the treatment of incurable maladies, as exemplified in the abdominal section for the extirpation of diseased ovaria. In a more strictly scientific point of view also, surgery is steadily advancing with the progress of physiology and pathology. An improved acquaintance with the phenomena of inflammation especially, derived from microscopical anatomy and micro-chemistry, is leading on to more rational views of treatment. Statistical records are daily furnishing more accurate data of the results of practice, and the innumerable facilities now afforded in all the more civilized communities for extended and multiplied observation are increasing in an incalculable ratio our stock of knowledge. So much is this the case that no individual in active practice can hope to embrace all that is in progress, and all that has been done, even within a limited period, in his own reading and investigation, a circumstance which we feel assured will render the periodical Reports of the Progress of Surgery, which are to form an essential part of this retrospect, acceptable and useful to the surgical practitioner, embracing as they are intended to do, results—and more especially practical results—in reference to etiology, diagnosis, pathology, and treatment.

1. One of the most recent works that has issued from the press on any general division of the subject of surgery, and by a surgeon, is an interesting volume by Mr. Macilwain,\* on the Nature and Treatment of Tumours. Mr. Macilwain maintains it to be a pure assumption that cancer, fungus hematodes, and other malignant tumours, are incurable by the powers of nature—and an assumption, moreover, we may add, the tendency of which is the more pernicious as it perverts and discourages the labours of those who are industriously inclined. He takes a threefold view of the causes of tumours:—In the first place they are referable to the food containing something unusual;—secondly, To the assimilating organs acting on the ingesta in some unusual manner;—and lastly, or to both these circumstances combined. His curative intentions are therefore directed to diet, and to a regulation of the various organs which represent the different stages of assimilation. No organ in the body, according to the views of this author, is more frequently in fault than the liver, and this often without any indicative symptoms. A knowledge of this fact is to be arrived at by a careful history of the patient, in order to ascertain what injurious influences the liver has been exposed to at any time, and whether ordinary influences have been so exalted as to become injurious. The influences referred to are especially—sedentary habits, and the free use of alcohol, and of greasy, fatty, and saccharine

\* Treatment of Tumours, &amp;c. 8vo. London, 1845.

matter; substances which contain a superabundance of carbon. To regulate disordered liver he tries to diminish the quantity of carbon, except such as is contained in necessary food. A man may eat meat—Mr. Macilwain observes—without fat; butter is unnecessary; so is sugar; and in this way, without depriving the system of anything really necessary to health, the liver may be materially relieved, and this indeed is the great mode of assisting its function. The result of Mr. Macilwain's experience in the treatment of tumours is the smallest possible degree of confidence in local applications, particularly in those which are supposed to excite curative actions in the part, and might be called *positive* remedies. To the judicious management of those which act by excluding injurious agencies, or *negative* remedies, he attaches more importance.

Cancer, so long as the viscera are sound, is a curable disease; and the absorption of malignant tumours generally is under the influence of remedial treatment. Our author gives the case of a lady, aged 39, who consulted him for a tumour of the breast which had been pronounced hopeless. It was a true specimen of carcinoma—very hard, adherent to the subjacent parts, the skin tucked in at the nipple with a dark spot there, slightly abraded, painful, with a sense of drawing; the arm swollen and red in the vicinity of the tumour, and a few drops of blood issuing from the dark spot daily. Her general health was greatly deranged—probably not one function in her whole body performed healthily. The plan of treatment consisted in the use of a very plain diet, the rigid exclusion of sugar and grease of all kinds, friction to the skin, with special avoidance of any interference in the neighbourhood of the tumour. After the cessation of her scanty catamenia, a few leeches were applied to the pubes, and the medicine generally used were aloes and ipecacuanha, with now and then a dose of calomel. The case improved; the tumour became moveable, the suffering from it very trivial, and except when she transgressed in her regimen, although now and then a little uncomfortable, she was generally easy.

The patient relaxing in her obedience, an eminent physician was consulted, who allowed her to "eat what she pleased." The result was, that in a few days she was thrown into a state of most terrible suffering, for which opium was prescribed without relief; but a return to the former plan was attended with almost immediate amelioration, although she never recovered her former ease. So long as she adhered strictly to the plan, she had almost absolute immunity from pain; but she frequently tampered with impunity. She ultimately died, as the author believes, from her own imprudence, in great agony. Mr. Macilwain gives other cases to illustrate the beneficial effects of regular and daily exercise, a plain diet, and the exclusion of saccharine, oleaginous, and alcoholic matters in malignant tumours. The plan of diet should be "simple, and strictly defined;" and one of his correspondents, Mr. Kingdon, remarks:—"I am now convinced that many diseases, which have hitherto been considered incurable, may be cured by that close attention to the minutæ of function which *does not permit the most insignificant portion of the frame to be overlooked.*"

As respects depositions generally which are not cancerous, Mr. Macilwain now seldom sees any in which he cannot succeed, by strict treatment; sometimes in procuring their absorption, almost always in arresting their progress; and he believes that he has succeeded in promoting the absorption of ten or twelve malignant tumours at least.

The author's observations on the progressive results of the successful treatment of tumours are thus described:—

"The first change observed is, that if there have been much pain, there is a very material and marked diminution, or a total subsidence of it, without the influence of *opium or any other narcotic*; and this, too, when opium and other narcotics have been exhibited in vain. The tumour becomes loosened as to its subjacent connexions; and I have more than once seen a tucked-in nipple resume the natural appearance. A change yet more important is, that the tumour which had before, perhaps, presented itself in one mass, with more or less irregularity, becomes broken into portions, so as to feel like *separate depositions*, intersected as it were by lines of more healthy structure. This is speedily followed by a diminution of

the characteristic hardness; so that after awhile the carcinomatous character becomes entirely lost. The change progressing, the tumour becomes gradually absorbed, until nothing remains but what, if now examined for the first time, might be taken for an enlarged gland; and this gradually disappearing, the part resumes its ordinary character. Now all this has never happened without a change in some one or more important function to which the treatment has been specially directed, though this has varied in different cases according to the function which, on careful analysis, appeared to be most seriously or primarily affected. If I were called on to name any dietetic measure most general, I should say the diminution of carbon, in the interdiction of grease, sugar, and alcohol. If I were asked what one organ has most frequently appeared to take the lead, I should say the liver."

We have thus given as fair a statement of Mr. Macilwain's views as our space will admit of, because we verily believe that much suffering accrues, if not loss of life, from men holding the most eminent position as surgeons and physicians, distrusting the unquestionable powers of nature, and relinquishing the systematic and scientific treatment of what they deem hopeless diseases. Heterologous formations frequently disappear, to the surprise of the surgeon, without any obvious cause, but not without a cause. These cases establish the justice of our claims for the powers of nature. We believe our readers will regard Mr. Macilwain's views respecting the principles and the details of his treatment not merely as interesting, but as important.

2. A work has also been recently published on the *Treatment of Cancerous Tumours of the Breast without Operation*, in Paris, by S. Tanchou, in which 302 cases of cancer are collected together, as having got well after the employment of various remedies. We find this author boldly maintaining that cancer is not absolutely incurable. He gives, it is true, but three cases of amelioration, and fails to prove his position; yet the cases cited have been admitted by some of his reviewers as demonstrative that it is possible not only to ameliorate cancerous affections, but also to arrest their progress and render them stationary.

3. A work published at Paris by Dr. Jules Guyot in 1842, and reviewed in the *British and Foreign Medical Review* of January last, will doubtless call the more particular attention of surgeons to the important subject of temperature in operations and the treatment of surgical diseases.\* M. Guyot infers, from numerous experiments, that air, when devoid of any noxious impregnation, has, simply considered, no injurious action on living parts. It may, nevertheless, become injurious in two ways:—1. Mechanically, as by causing the lung to collapse in penetrating wounds of the chest,—by destroying the cellular attachments of the viscera in wounds of the abdomen,—and by distending or compressing organs as in emphysema. 2. As the medium of an injurious temperature, air introduced into the serous and synovial cavities occasions inflammation by its coldness: at the temperature of 36° cent. (96½° Fahr.), the articular, cranial, thoracic, and abdominal cavities, may be opened without danger of inflammation, in so far as the contact of the atmosphere is concerned. By the term "Incubation" as a curative process, M. Guyot implies a temperature of 36° cent. applied to the body by means of heated air. He distinguishes three species:—1. Local or circumscribed incubation adapted to amputations, wounds, &c. 2. Diffuse incubation, acting upon a considerable portion of the body, to re-establish a function, restore the equilibrium of the circulation, &c. 3. General incubation applicable to premature birth, defective development of infants, and various diseases. It may also be continued or intermittent in its application. Various kinds of apparatus are employed for the purpose. This peculiar treatment has been tried and found successful in ulcers, some of which were of an inveterate kind; and in one case of twenty-five years' standing, in a man aged 67, in a large, callous, and fistulous sore, in an immense lacerated wound of the arm. In a case of phlegmonoid erysipelas, terminating in gangrene, two days after the commencement of the treatment, the suppuration

\* \* De l'emploi de la Chaleur dans le Traitement des Ulcères et des Plaies après les Amputations et les grandes Opérations Chirurgicales, de l'Hystérie, des Maladies de la Peau, du Rhumatisme, &c. Par M. le Dr. Jules Guyot.—Paris, 1842.

was diminished to one half, the wound was covered with granulations, and the fever had ceased. In œdema of the limba, in phlegmonoid erysipelas, eczema, and a numerous variety of cases, it appears most essentially to influence the cure.

M. Guyot has put his method into practice in *white swelling*, and records cases which seem to indicate that it is worthy of a more extensive trial. A case of chronic rheumatism was cured in twelve days, and a case of periostitis of the tibia in eight days. A malignant or ill-conditioned ulcer of the nose, which had resisted ordinary treatment, was much benefited by incubation; and in another case a cancerous ulcer, of the worst character, also seated on the nose, this treatment modified the sore in a remarkable manner; the mammillated and tuberculated surface contracted its limits, caused the redness and pain to disappear, and predisposed the tissues to cicatrization. The arsenical paste was then applied, and the cure became complete. Thirty-two cases are detailed in which incubation was applied to the stump after various amputations, and the results, as compared with the results of amputation under ordinary treatment in the Parisian Hospitals, were very greatly in favour of the remedy, although there is some reason to doubt whether they were fairly attributable to the artificial temperature.

While on the subject of temperature in the treatment of surgical diseases, we may state that in Mr. Grantham's work, quoted in our extracts, great stress is laid upon the principle of keeping up the normal temperature, or "the vitality" of the superficial structures in inflammation of the ligamentous, tendinous, and cartilaginous parts of the body; and the book contains illustrations of the efficacy of the treatment founded on this principle. Thus, in the after treatment, on reduction of a bad dislocation of the ulna and radius, Mr. Grantham steams and foment the limb for an hour, and then applies a large hot bread-and-water poultice for several days. He observes of this case, which was cured in a few days, "That no blood was lost, nor any cold application used." The treatment was simply keeping up the action of the exhalents and absorbents, so as to remove tumefaction and extravasation without lessening the vital properties pertaining to the low organized textures, as it is the ligamentous and tendinous structures which are injured in all dislocations.

In the operations for removal of ovarian tumours, the surgeon finds it of the first importance to regulate the temperature of the atmosphere. In fact, no one who has witnessed the extent and length of time of the exposure of the abdominal viscera in many of these operations can doubt that their safety has been, to a very considerable extent, secured by attention to this circumstance, and that inattention to it would very decidedly increase their mortality. We have placed this subject thus imperfectly before our readers, convinced that surgeons in this variable and inclement climate are, in the main of their practice, much too negligent on this important point, and in the hope that the future numbers of the "Retrospect" will have to record more favourable results in several departments of surgical practice, when it receives a greater share of attention.

4. Dr. Egan has lately published an elaborate article *On the diagnosis and treatment of syphilitic diseases*,\* the substance of which he recapitulates as follows:—

"1st. I have observed the simple superficial ulcer, unattended with indurated margin or base, give rise to a papular eruption, pains resembling rheumatism, increased vascularity of the throat, generally accompanied with enlarged tonsils. In this form I have never witnessed the occurrence of rupia, nodes, or ulceration of the back of the pharynx: in this class, which were for the most part treated without mercury, constitutional symptoms occurred far more frequently, but were of a milder description than in those where the opposite plan of treatment was adopted. When topical applications fail, mercury is resorted to for the purpose of accomplishing a cure. 2dly. That strong presumptive evidence has been afforded, that the matter of gonorrhœa, in its incipient stage, is capable of producing a mild form of secondary symptoms; but not having been able to substantiate this opinion by the process of inoculation, I cannot, as far as my expe-

\* The Dublin Journal of Medical Science, May, 1845, p. 198.



rience goes, lay it down as an ascertained fact. 3dly. That the excavated ulcer, with indurated margins and base, commonly described as the Hunterian chancre, has, in my limited number of cases, been succeeded by a scaly eruption and excavated ulcers of the tonsils; and that in those cases alone mercury deserves the name of a specific. 4thly. That the phagedenic ulcer, where it has existed *ab initio*, does not owe its characters to any peculiarity of constitution, but to a specific virus, as is evinced in the dissimilarity and inveteracy of the secondary and tertiary symptoms; and that in such cases mercury is decidedly injurious. And, lastly, that all the secondary forms of syphilis, with the exception of iritis, are curable without the aid of mercury; the cure, however, is much more protracted, but relapses far less frequent."

5. There is nothing before us of very great importance in *Thoracic Surgery*. Forty cases of injuries of the chest were the whole number received into Guy's Hospital from January 1, 1843, to December 31, 1844. The series excludes injuries in this region of minor importance treated out of the hospital. Of the 40 cases four terminated fatally, that is to say, 10 per cent. The cases include, simple injuries of the chest; fractures of the ribs, sternum, and clavicle; comminuted fractures; penetrating wounds of the chest; injuries of the lungs; with different complications, as pneumonia, pleuritis, pleuro-pneumonia, emphysema, hemoptysis, collapse, and general obscure inflammatory and other symptoms. The usually admitted principles of treatment were resorted to, as—rest, bandaging, bleeding—general and local, and purgatives; and to meet special complications and symptoms—calomel and opium, incisions, punctures, brandy and other stimulants, blisters, antimony, diaphoretics, &c. Except that a series of such cases must present novelties in their details, and if faithfully recorded, must be interesting and instructive to the surgical practitioner, this report does not contain anything new in principal, either as respects diagnosis or treatment.

6. The following is an interesting case of injury of the chest, with hernia of the right lung.\* A child 13 years old, fell from a considerable height, whilst he was playing, and struck himself against the end of a branch of a tree which had been recently cut. A wound about three inches in length on the anterior part of the right side of the chest was the consequence, extending transversely between the fifth and sixth rib. Dr. Anglo, who was called in immediately, found a considerable quantity of blood from the interior of the chest, and at the same time an elastic tumour about the size of the fist, and of a rosaceous colour, having a transverse wound, and evidently being part of the inferior lobe of the lung. There was much oppression and anxiety, an extreme pallor, the pulse "miserable," the extremities cold, and every thing indicated imminent danger. The protruded portion of the lung was reduced, although with difficulty, and the edges of the wound were brought together with bandages. The patient was three days recovering from the violence of the concussion. Reaction then came on which was met by bleedings and antiphlogistics. The wound soon cicatrized, the pulse recovered its functions, and in six weeks the cure was complete. The French Journals contain several cases in which paracentesis thoracis has been performed with successful results.

7. In *Abdominal Surgery*, Ovariectomy occupies the first place. The revival of the abdominal section for the purpose of removing diseased ovaria, is an important circumstance in the history of modern surgery, and the progress of opinion respecting this important operation, both as to its propriety as a mode of cure, and the various modifications which may be suggested in the manner of performing it, deserve the immediate and most serious attention of every practical surgeon, for, although the general treatment of the disease itself most frequently devolves upon the accoucheur, the formidable nature of the operation will in all cases render it desirable that it should be undertaken by the practical surgeon. We propose to fix the attention of our readers upon the state of our knowledge at the epoch from which this "Retrospect" dates, by referring to Mr. Phillip's paper on the subject. †

\* La Lancette Française, Avril 1, 1845.

† Medico-Chirurgical Transactions, vol. 27, p. 436.

This gentleman has collected the results of 81 operations :—

The tumour was extracted in . . . . .	61 cases
Adhesions, &c. prevented its extraction in . . . . .	15
No tumour was found in . . . . .	5=81

Of the whole number :—

The recoveries after abdominal section were . . . . .	49
The deaths . . . . .	32=81

But all the cases in which no tumour was discovered, and the operation was not completed, recovered.

Of the cases in which the tumour was extracted there were :—

Recoveries . . . . .	35
Deaths . . . . .	26=61

Of those in which adhesions and other circumstances prevented the removal of the tumour, nine recovered, and six died.

The large incision was resorted to in 55 cases with the following results :—

Cured . . . . .	23
Recovered . . . . .	6
Died . . . . .	26=55

The small incision in 27, of which there were :—

Cured . . . . .	13
Recovered . . . . .	7
Died . . . . .	7=27

Several years ago, that distinguished physiologist and practitioner, Dr. Blundell, drew up a paper which was read to the Medico-Chirurgical Society, the object of which was to demonstrate what the author then believed to be a fact, that the fears entertained by surgeons were greatly exaggerated respecting the dangers that attend wounds of the peritoneum. We have not seen the paper, but have had opportunities of conversing with its author upon the subject, and we understand that it embraced cases of most extensive laceration of the parietes of the abdomen, with extrusion of the viscera, which had ultimately recovered. The Society declined publishing the paper, but the author has never had reason to alter his own deductions from a consideration of those cases. The recent results of the abdominal section tend very greatly to confirm his views. It is quite true that in many cases of ovarian disease, previous to the period at which an operation is likely to be performed, the whole peritoneum has assumed a pathological condition; but it is equally true that inflammation, and all its consequences, is liable to occur at any period during the progress of ovarian disease, and also, that it is inflammation which is chiefly dreaded by the surgeon, in making extensive incisions through the peritoneum, and in handling and exposing the abdominal viscera. It is not for us to encourage or discourage any particular *methodus medendi*, we are rather the chroniclers of events; and we shall in future collect all the cases which meet the public eye, wherein this operation is resorted to, with a view to place the results before our readers. It may, however, as we conceive, be justly remarked, that according to the evidence before us, the danger of inflammation in these cases, is not so great as we have been taught to believe, and the observation of Dr. Blundell upon this head is perfectly correct.

An additional case is recorded by Dr. Bowles, of Harrison county, Ohio, wherein the incision was nine inches along the linea alba; the omentum was found to be adherent to the tumour, and the latter firmly bound down by adhesions to the bladder and uterus; but all the adhesions were easily separated by the handle of the scalpel. The patient vomited during the operation, producing protrusion of the intestines. To prevent distension of the bowels by flatus, a

tube was kept in the rectum. The tumour was solid, and weighed five pounds. No doubt remained of ultimate recovery.\*

Cases by Mr. Clay, Mr. Lane (unpublished,) and others, since the above record in the *Medico-Chirurgical Transactions*, have come to our knowledge; they are for the most part successful, and will be placed before our readers in our next number.

8. The proposed revival of the treatment of fistula in ano by ligature, according to an improved method, has met with objections. It is asserted to be inapplicable and insufficient in many cases, and also more painful and hazardous than the operation with the knife. Mr. Salmon, after nearly twenty years' experience, denies that the operation by incision is attended by any peculiar hazard from hemorrhage or otherwise. In 248 cases, selected promiscuously, he states that no fatal hemorrhage occurred; in 20 instances only, was there any bleeding which required attention, and in these cases the simplest precaution sufficed to prevent any serious inconvenience. The operation by ligature has, again, been admitted to be applicable in cases of small and single sinuses, but its propriety doubted where large abscesses, with loss of substance, and complicated sinuses tending in different directions, occur. In these latter cases, Mr. Luke† admits that ligature offers no better prospect of success than the knife, but, he states, "certainly not less." (69) The probability of success must depend much upon the extent and direction of the communicating sinuses, and upon their complications with ligamentous and osseous structures. In more remediable cases, Mr. Luke remarks, that although, when mismanaged, the ligature may produce protracted pain, yet, when well managed, it neither produces as much pain as the knife, nor as much hazard; particularly where the rectal aperture is barely within reach of the finger. The insertion of the ligature according to the plan recommended, causes scarcely more pain than a common examination; it is at no time necessary to draw it so tight as to cause pain; "during the first few days, or until the slight inflammation of the fistula which succeeds its introduction has attained its maximum amount," it should be left loose; it is then made nearly tense, but not to give pain, and the tension is to be kept at this point by renewed turns of the screw every two or three days. The whole proceeding is to be slowly conducted, and in this consists the essence of the improvement as compared with the mode of applying the ligature in former days. When pain occurs, it usually arises on the accession of inflammation, causing the included parts to swell; the ligature is then to be loosened, which is readily effected by the kind of apparatus employed. We may add, that the operation by the knife is one greatly dreaded in most cases by patients, and frequently deferred in consequence of that dread; and there can be no doubt, that if the surgeon can conscientiously resort, as a general principle, to the treatment by ligature, the subject of this formidable disease will more readily confide in the scientific surgeon, and less frequently fall into the hands of the charlatan. (69)

9. One of the most important surgical subjects which has lately been brought before the consideration of the profession is *the cure of aneurism by pressure*. Several cases of this formidable disease, cured without operation, are quoted in our extracts, and it is most important that the practical surgeon should be made fully aware of the recent results of experience in this method of treatment. Compression effected in various ways has repeatedly been resorted to, for the purpose of arresting or curing aneurism, but we believe that we may state, at once and unequivocally, that the application of pressure upon strictly scientific principles, has never had a fair trial. The cases before us justify the opinion that in many cases it will prove an adequate remedy, and will supersede the use of the ligature.

It may be useful to take a cursory view of the objects for which compression has been resorted to in the treatment of aneurism.

Dr. W. Hunter held that when the integuments begin to give way in aneurisms of the aorta, a bandage judiciously applied might preserve life for some considerable time, but looking to the effects of pressure on the arterial tunics, during

\* Medical Times, May 3, 1845.

† Lancet, Feb. 10, 1845.

the gradual dilatation of the aneurismal sac, where it meets with the resistance of the osseous structure, as of the sternum or vertebræ, he came to the conclusion, that in the main, compression or tight bandaging would only aggravate the evil. Dr. D. Munro taught the same doctrine. But in the case of false aneurisms, when small, particularly those occurring in the arm from bleeding, Dr. Munro advocates, together with moderate depletion, compression on the part, by means of compresses and bandages, to prevent the blood from flowing into the cyst; the compression to be continued not only till the tumour disappears, but likewise for some time after, lest a relapse should occur; quoting cases which have been cured, but concluding with the remark, that "where such aneurisms are large, and of long standing, this method can have no effect."\* Guattani and the surgeons of Rome about this period (1750-60,) attached more importance to compression as a remedy, and resorted to it somewhat more systematically in crural and popliteal aneurisms. The latter author recommends gradually compressing the aneurismal tumour, by means of bandages applied more and more tightly from day to day, and gives successful cases. It will be observed that Guattani's method was "direct and energetic"† pressure. Subsequently to the Hunterian operation being adopted, the plan of compressing the artery at some distance from the tumour was made trial of by Dubois, Astley Cooper, and others, the object being, by severe and continued pressure, to render the artery impervious. The objections to these modes of applying pressure are stated to be, and no doubt are, positive. It is either insufficient, or it is impossible to protect the neighbouring parts from its influence, and accordingly the flow of blood in the collateral vessels is arrested; it requires to be continued for a great length of time, and is attended with great pain. Hence constitutional disturbance followed by inflammation, ulceration, or sloughing of the compressed parts; in numerous cases the patient has been unable to sustain it, and from other causes it has proved unsuccessful.

We will furnish our readers with a short account of the more scientific application of pressure for the cure of aneurism, lately adopted by Hutton, Cusack, Bellingham, Allen, Greatrex, and Liston, from Professor Miller's *Principles of Surgery*. The pressure is made at the Hunterian site, but is neither constant nor severe. By any suitable apparatus, a moderate degree of pressure is applied to the vessel, at a point where the coats may be expected to be sound, and consequently not prone to ulcerate from various causes.

This is maintained so long as it can be conveniently borne by the patient, but no longer. When uneasy sensations become intense, with swelling and numbness of the limb, and throbbing in the part, the pressure is either slackened or removed. After a time, the parts having recovered, it is re-applied. Again it is removed, and thus the disasters formerly attendant upon the treatment by pressure are avoided. At the same time that the circulation in the aneurism is moderated, the tumour begins to diminish, its pulsation is less, and it feels harder and less compressible; ultimately pulsation wholly disappears, and induration becomes complete, absorption advances, and the cure is obtained with or without a previous state of the vessel. Throughout the treatment absolute repose and decumbency are maintained, with an antiphlogistic regimen. Also, the limb below the compressed point must be uniformly and equally supported by bandaging, lest passive congestion and œdema supervene; and this pressure may, from time to time, be somewhat increased on that part of the limb which includes the aneurismal tumour. The process is one of weeks not days—gradual not sudden.—interrupted, not continuously progressive. The pressure requires to be neither great nor constant, for we do not desire obliteration even temporary. It is sufficient to moderate, not essential to obstruct the flow of blood. The treatment is conducted rather as if itself were not the agent of cure, but only the means whereby the spontaneous cure may be originated and favoured.

The objections still advanced by Professor Miller to this improved method of

\* Observations on Aneurism by John E. Erichsen, published by the Sydenham Society, 1844.

† Miller's Surgery.

applying pressure are :—The protracted period and ultimate uncertainty of the cure. If improperly conducted, it is in every point of view inferior to the ligature. It is less capable of general application, since many systems cannot tolerate pressure ; our experience of its use is in its infancy.

The last objection of Professor Miller is exactly that which will render it incumbent on us, in the future numbers of the "Retrospect" to place before our readers an abstract of all the cases, whether successful or unsuccessful, that may for some time to come meet the public eye. This is the only way by which profit can be made to accrue to the great body of surgeons by the experience of individuals. At present it will suffice to say that in 1831 Assalini published a case of popliteal aneurism cured by pressure. In November last, Dr. Hutton, of Dublin, recorded seven cases treated by pressure, one only of which was unsuccessful. Giraldès in his memoir\* cites fifteen cases, including those just referred to, of aneurism treated successfully by compression of the femoral artery, and he remarks that the mean duration of the treatment was 24 days, the minimum 5 days, and the maximum 90 days; and this author judiciously suggests that one circumstance which ought to plead strongly in favour of compression, and recommend it to the attention of surgeons, is the contingencies which await the operation by ligature. The ligature is not an infallible remedy ; too frequently the disease returns after the operation, of which circumstance instances are cited upon the authority of Cooper, Brodie, Roux, and Lenoir ; and serious accidents, as consecutive hemorrhage, wounds, and inflammation of the veins, gangrene, and death, have been the consequence. Such being the fact as relates to the treatment now resorted to by surgeons, the new plan ought at all events to be tried for the present, in every case, before resorting to the operation.

The advantages of compression over ligature are, that it is exempt from all danger ; it is, so far as the evidence enables us to judge, more universally successful ; it is applicable to certain cases of aneurism to which the ligature is not, and to some in which the operation by ligature would be likely to be followed by unfavorable results, as in the case of very large aneurisms which compress the collateral circulation. It is applicable in cases wherein the ligature is contraindicated from disease of the arterial system, and in cases of the "aneurismal diathesis ;" also in cases of spontaneous aneurism in broken-down constitutions, in which the surgeon would perform an operation only with the greatest reluctance ; and lastly, its employment, if ever it should happen to be unsuccessful, does not preclude the subsequent operation by ligature.

We conclude this article with a quotation from Dr. Bellingham's explanation of the mode of applying the pressure.†

"Instead of employing a single instrument, we employ two or three, if necessary ; these are placed upon the artery leading to the aneurismal sac, and when the pressure of one becomes painful it is relaxed, the other having been previously tightened ; and by thus altering the pressure, we can keep up continued compression for any length of time."

The instrument "consists of an arc of steel covered with leather, at one extremity of which is an oblong, padded splint ; the other extremity terminates in a nut, containing a quick screw, to which a pad, similar to that of the tourniquet, is attached. . . . The principle is extremely simple ; so much so, that the patient can regulate its application himself, and it can be made of every size, so as to compress any vessel within the reach of compression." (78-9.)

10. The subject of tracheotomy and the removal of foreign bodies from the larynx excited great interest at the period when Mr. Brunel's case was before the public. In that remarkable case the patient suggested the idea of inverting the body so as to give the same facility to the passage of the substance out of the tube which it had to get in, but the experiment demonstrated that the human system is not a mere machine—a vital spasmodic action closed the glottis and rendered the experiment unsuccessful, until the art of the surgeon was resorted

\* *Journal de Chirurgie*, Mars 1845. .

† *Dublin Journal*, May 1, 1845.

to for the performance of tracheotomy. A case, however, has been recorded in the *Northern Journal of Medicine* from which it appears that the idea of the mechanician will sometimes succeed, and that the knife of the surgeon may be superseded. A shilling slipped through the glottis of an individual, giving rise to comparatively little inconvenience. It seemed to the patient to be fixed at the cricoid cartilage, and that it would return if he were placed on his head:—

"The man was placed with his shoulders against the raised end of a pretty high sofa, and then being seized by three of the most powerful of those present by the loins and thighs, he was rapidly inverted, so as to bring the head into the dependent position, and after a shake or two, Dr. Simpson at the same time moving the larynx rapidly from side to side, the shilling passed into the mouth and fell upon the floor." The relief was instantaneous and complete.

In our own immediate neighbourhood a piece of cotton wool passed into the trachea of a lady from a carious tooth, a medical man was called in, and precipitately ran out for another surgeon to perform tracheotomy. In the interval, the husband believing that his wife was at the point of death, inverted her body, the foreign substance was expelled, and before the return of the doctors she was perfectly restored. It should not be forgotten, however, that the foreign substance in falling from the trachea might fix itself in the glottis and cause almost instant death, so that the inversion of the body cannot be considered a safe measure unless the surgeon is at hand with his scalpel.

11. The various foreign and domestic journals during the last six months contain the usual amount of information in the shape of lectures, essays, discussions, cases, &c.; but we believe we have extracted the most important novelties. There are some interesting instances of those cases which involve what are usually styled the minor operations of surgery, which are by no means undeserving attention. The following is an instance in point:—A lady from the country had a carious tooth filed to admit a pivot to an artificial tooth. This trifling operation, which was attended with little pain, was followed by an abscess in the jaw, for which the extraction of the root was recommended; but as it was a superior canine tooth, with a deep root, and as the stump presented no hold, the most skilful dentists would not undertake the extraction. According to the advice of M. Récamier, M. Maisonneuve made an incision in the mucous membrane; and after exposing the maxillary bone, he divided the bone along the alveola. This operation is infinitely less painful than those resorted to by dentists with their various instruments. The root being thus exposed, M. Maisonneuve laid hold of it with a hook, and it was removed with great ease.\*

12. Operations, novel in character, or remarkable for their boldness, are sometimes resorted to *once* even by judicious surgeons, and are justifiable, although judging from results we may arrive at the conclusion that they ought never to be repeated. These and the more rash experiments of the ignorant or reckless, like rare and extraordinary cases, frequently throw light upon the phenomena of nature, or serve as beacons for the future. Instances of one or more of these different classes of surgical cases will be found in that part of our volumes set apart for "extracts," and we may add to those contained in our present volume two cases of "Puncture of the intestines to relieve the agony of distension in supposed internal strangulation," lately recorded by Sir George Lefevre.†

"The lady of an officer of high rank had been suffering for some time with disordered digestion, when she was suddenly seized with violent vomiting and purging, and fecal matter was discharged by mouth. To this succeeded constipation and tympanitis; the latter being so distressing that it was resolved to puncture the bowels. Large quantities of gas escaped; the patient felt immediately relieved from her extreme sufferings. She died the same day or the following."

"A lady, the mother of six children, was in the family way of the seventh, and in about the fourth or fifth month of utero-gestation. She had for years been

\* *La Lancette Française*, March 20th, 1845.

† *An Apology for the Nerves*. By Sir George Lefevre, 1844.

in the habit of neglecting her bowels, and retaining her feces for five or six days, and even longer with impunity. She complained of sudden pains in the bowels, which she took to be colicky, and used some domestic medicine. The pains increasing, and the bowels continuing locked, blood was taken from the arm, and leeches applied very freely to the part. No relief was afforded. The abdomen became very tense, and the pains returned at repeated intervals. She expressed herself thus, that she had borne six children, and that the united pains of all her labours were not so excruciating as any one of the pains under which she suffered. All means had failed in procuring her relief. Six or seven medical men were in constant attendance upon her. Injections, warm baths, cold effusions, bleeding, opium in large doses, nothing relieved her.

"It was, therefore, upon the idea only of shortening her sufferings, that it was proposed to puncture the intestines. A trocar was thrust into the colon, some gas escaped, and she exclaimed, 'I can breathe now.' Fæces soon filled up the canula; the spasms returned, but in rather diminished force. She sank in about fourteen hours after the operation, suffering to the last."

## III.

## REPORT ON THE PROGRESS OF MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN.

BY THE EDITOR.

We shall arrange the contents of this Report under the following heads:—  
 1. Diseases of females unconnected with pregnancy. 2. Diseases of pregnancy, labour, and the puerperal state. 3. Diseases of children.

§ I.—*Diseases of Women unconnected with Pregnancy and the puerperal state.*

1. *Amenorrhœa*. The disorders connected with the important function of menstruation never fail to command a considerable share of attention. The different aspects which deficiency of this excretion may assume, are well described by Mr. Bell, in a paper published in a recent number of the *Edinburgh Medical and Surgical Journal*.\* In reference to the *modus operandi* of emmenagogue medicines, this author observes that much less assistance has been derived from the more correct physiological notions respecting the function of menstruation which have been established during the last few years, than might reasonably have been expected; in fact, that the theory of the periodic maturation and expulsion of ova so far from rendering the action of medicines more intelligible, has tended rather to the greater obscurity of the subject. We cannot, however, admit that the explanation of the action of these medicines as derived from their operation upon the blood, is at all less applicable under our improved physiological knowledge, than it had previously been; for it is just as easy to conceive that a due constitution of that fluid is necessary to the perfect maturation of an ovum, as to the healthy formation of the bile. We do not mean to assert that there is any close resemblance between the production of ova and the secretion of bile, but merely that as both constitute the essential function of the ovarium and the liver respectively, a healthy state of the blood is as necessary in the one case as in the other, and the action of medicines, therefore, equally intelligible.

The comparative power of the different preparations of iron in restoring the blood in chlorotic patients to its normal state, is noticed by MM. Raciborski and Selade; by the latter in an elaborate paper on the therapeutic value of the ferruginous preparations in general. M. Raciborski agrees with MM. Quevenne and Miquelard in giving the preference to metallic iron in an extremely minute state of division, the mode of obtaining which will be found in a former part of this work. (100) The memoir of M. Selade† is very complete of its kind, and enters minutely into the value of each individual preparation of iron. The best of these, according to this author, are the proto-muriate or hydrochlorate, the carbonate and the lactate; into which latter it is believed by Gelis and Conté, that the other preparations are converted by the action of the gastric juice. This opinion, however, is denied by M. Selade, who leans to the assumption that the metal enters into combination with the free muriatic acid of the stomach. The question is one of too purely a chemical nature for this report, and we therefore shall pass on to something of a more practical nature. We may, however, before dismissing the subject, briefly allude to the author's theory of the mode in which the iron combines with the blood. When, according to his theory, a preparation of iron becomes absorbed, it is quickly decomposed, and its ferruginous

\* April 1845, p. 241.

† Archives de la Médecine Belge, Fev. 1845.



portion combines with the globules which have lost their hæmatosin, and which in this condition are found in company with great numbers of colourless globules. If it has already been oxydized, it soon becomes converted into the carbonate of the protoxide by uniting with the carbonic acid of the venous blood. When these globules arrive at the lungs, they absorb oxygen from the atmosphere, and the iron passes at once to the state of peroxide, the carbonic acid being given off.

Although chlorosis and amenorrhœa are not necessarily connected, we cannot do better than here allude to the description by M. Ricord,\* of a form of Chlorosis depending upon syphilitic contamination. It has been ascertained that the action of the syphilitic poison is principally exercised upon the globules, in the number of which it causes a considerable diminution, for which reason ferruginous preparations are in general in these cases of great efficacy. They are not, however, as has been observed by M. Ricord sufficient by themselves as in simple chlorosis, but require at the same time a special antisiphilitic medication. M. Ricord, therefore, employs mercurials as well as iron, but we may remark that no combination is more likely to be of use in these cases than a combination of the latter metal with iodine.

2. *Menorrhagia.* In the treatment of profuse menstruation, the oxide of silver is very highly spoken of by Sir James Eyre in a useful little work lately published.† According to the author's experience, it is superior to the *secale cornutum*, gallic acid, and indeed all other remedies. The dose is half a grain three times a day gradually increased to one or two grains. A new, and according to M. Givestet,‡ very active medicine in the same disease is the expressed juice of the *urtica urens*. Our own experience in the treatment of menorrhagia is greatly in favour of the ergot of rye, which we give in the dose of 10 grains of the powder with 6 grains of the *pulv. ipecac.* c. We have seldom met with a case unconnected with organic disease of the uterus which has not yielded speedily to this combination; and we may state, moreover, that having been in the habit of giving it for five or six years, we have never met with any symptom whatever to lead us to apprehend the least inconvenience from its employment.

We may likewise observe that the active principle of the *secale* called ergotin has been productive of the greatest benefit in the uterine hemorrhages depending upon malignant disease. Dr. Ebers,§ who has had extensive experience of the medicine, recommends the following formula when the ergotin cannot be procured. Bruised ergot 100 grammes, boiling water 500 grammes, macerate for three hours and strain; then add 5 grammes of fresh lemon juice.

3. *Vicarious menstruation.* Three cases of this rare, though sufficiently familiar occurrence, have been lately recorded. The first|| is that of a female who having received a lacerated wound near the elbow, had from it a supplementary periodic discharge for several months in succession. Upon her becoming pregnant the wound partially cicatrized, but the scab fell off subsequently to her delivery, again giving issue to a periodic discharge of blood, which continued until the menstrual function became thoroughly re-established. The second instance is reported in the *New-York Journal of Medicine*. The third was brought before the *Société d'Emulation of Paris* by M. Forget.¶ The supplementary discharge in this case was from the conjunctiva, auditory passages, and from certain portions of the integuments.

4. *Diseases of the Ovaria—Acute Ovaritis.* The occurrence of acute inflammation of the ovaries, independently of the puerperal state, is generally thought to be unfrequent, so much so that it appears to be treated of in systematic works on the Diseases of Females, rather because its omission would leave a hiatus in the nosological code than from any distinct conception in the minds of the authors of its existence as a separate disease. There is little doubt, however, that these organs are liable to attacks of inflammation in the virgin state; and it is probable

\* *Journal des Connaissances Médicales*, Nov. 1844.

† *Practical Remarks on some Exhausting Diseases*. London, 12mo. 1845.

‡ *Encyclographie Médicale* de M. Lartigue. Oct. 1844.

§ *Casper's Wochenschrift*, No. 23, 1844.

|| *Neue Zeitschrift für Geburtskunde*.

¶ *Bulletin des Académies*, Oct. 1844, p. 12.

that, if the diagnosis could be rendered less complicated, it would be found to be a commoner cause of many of the symptoms attendant upon dysmenorrhœa, and other sexual affections in females than is generally suspected. The subject has lately been illustrated in an elaborate memoir by M. Chereau,\* which has since been published in a separate form. The author acknowledges three conditions under which acute ovaritis may develop itself; first, and by far the most frequent, the puerperal state; secondly, immediately before and after the menstrual period; and thirdly, from extension of disease from neighbouring parts, as the rectum, uterus, &c. The disease may terminate in resolution, induration, softening, suppuration, and gangrene, the former being, under appropriate treatment, the most usual event. The inflamed ovary may occasionally be perceived by palpitation of the abdominal walls, but more frequently, unless greatly enlarged, it cannot be so recognised. A surer diagnosis may be formed either by vaginal examination, or by an examination per rectum, which latter is the most certain, as we are able by that means to make direct pressure upon the diseased organ. M. Chereau in the enumeration of the symptoms omits one which we have always found to be present in well-marked cases of the disease, viz. pain upon the passage of hardened feces. We have several times found patients labouring under dysmenorrhœa and sudden suppression of the menses, in which cases we believe that the ovaries are often inflamed, who have complained of a great aggravation of their sufferings whenever the bowels have been allowed to become costive. The treatment recommended by the author does not need particular mention. (192)

5. *Ovarian Tumour.* The subject of ovarian diseases of a chronic character have lately been invested with a peculiar interest, from the attempt that has been made to revive the operation of gastrotomy for their removal. We do not regret that we have no case to record of this operation which has occurred during the period embraced by our report. The merits of the operation itself have, however, met with a considerable attention at the hands of several persons well qualified to give an opinion, among whom we may mention Mr. Liston, Dr. Ashwell, &c., and the result has been its unequivocal condemnation by the majority, as unjustifiable in any point of view in which it can be considered. The remarks of Mr. Liston may be found in the *Lancet*, Feb. 8, 1845. Dr. Ashwell, after taking a general review of the progress of ovarian tumours, thus expresses himself: "It does not appear that statistics more favourable even than we have a right to expect, will materially change the aspect of the circumstances under which the operation is to be performed. . . . What would be thought of the feasibility of any other operation involving life in imminent hazard, if it were discovered that out of sixty-seven cases, it was from *absolute error in diagnosis incapable of completion in eighteen*: that of the remaining forty-nine, where the extirpation was effected, *sixteen died, and two were not cured*; so that out of the whole number the *operation failed in thirty-six, and succeeded in thirty-one, less than one half.*" (p. 647)

The editor of the *London and Edinburgh Monthly Journal* does not give a more promising view of the operation than the writer above quoted; indeed, as given by the former, the statistics of the operation place it possibly still lower in the scale of feasibility. In 89 cases collected in a tabular form in the above-named Journal, it appears that 55 recovered and 34 perished from the immediate consequences of the operation. But it appears also that in 9 cases either no tumour was found when the abdomen was laid open, or that it was unconnected with the ovary—cases which place the certainty of diagnosis in a very unfavourable light—and moreover in 14 others the operation could not be completed. Of these 23 patients, 13 recovered and 10 died; so that the number of instances in which the intentions of the operator were fully carried out is reduced to 65, of which number 25 died. This, it certainly appears to us, is a mortality which, although it should not deter from operating in a disease by which life must other-

\* *Mémoire pour servir à l'étude des Maladies des Ovaries.* Paris, 1845.

† *Practical Treatise on the Diseases peculiar to Women.* London, 1844.

wise inevitably be speedily sacrificed, should make us pause before we interfere in a malady which may be endured in many cases throughout long life without other inconvenience than that arising from the bulk of the tumour.

The last writer we shall mention by whom the operation of ovariectomy has been considered, is M. Cazeau, in a memoir on the subject presented to the Société d'Emulation of Paris, at the meeting of the 4th Dec. 1844. The opinions expressed by this author correspond in every respect with those above mentioned.\*

Turning from the disheartening evidence with respect to operative measures for the cure of ovarian tumours, we refer with pleasure to a case reported by Mr. Brown,† in which a perfect recovery followed the use of compression combined with the exhibition of mercurials and diuretics. This case, as Mr. Brown very justly observes, should encourage us to greater energy in the medical treatment of these diseases.

A case related by Mr. Hardy in the same journal, in which a large ovarian tumour, having twice impeded delivery, ultimately caused death by inducing strangulation of the intestine, and another by Dr. Lambrecht, in which the contents of an ovarian cyst were on two separate occasions discharged through the umbilicus.‡

6. *Diseases of the Uterus. Inflammation of the os and cervix*:—Dr. Bennett§ has drawn our attention to this subject in an admirable series of papers published in the *Lancet*. He establishes a distinction between inflammation of the cervix as it occurs in the virgin, and the same disease in women who have been and are exposed to sexual intercourse. In the latter individuals, he believes that a confirmed leucorrhœal discharge rarely exists without the presence of inflammatory engorgement of the uterine neck. A considerable difference is also found, according to the author, in the readiness with which the deeper structures become involved, between those women who have, and those who have not submitted to intercourse. In the latter, the deep uterine tissue is seldom involved, and the womb retains its natural resistance to the finger upon examination. On the other hand, in women who have conceived, the diseased action readily extends to the central textures of the cervix, inducing induration of the part, together with an enlarged and fissured state of the os uteri. Syphilitic ulcerations of the os and cervix uteri are exceedingly rare, as is observed both by Dr. Bennett and also by Dr. Heming,|| but other ulcerations, both in women in whom no venereal affection can be suspected, and in those who are labouring under the indubitable secondary effects of the disease, are as common. These ulcerations are in nearly all cases, according to Dr. Bennett, simply inflammatory.

The treatment of the non-ulcerated inflammation of the neck of the womb, as laid down by Dr. Bennett, is exceedingly simple, and consists chiefly of emollient or astringent injections. With reference to this expedient, he gives us a practical hint which is worthy of remembrance, to the effect that the injection should be used by the patient lying on her back, with the pelvis somewhat raised; by which means the injected fluid is more readily applied to the diseased parts. It very commonly happens, when the injection is used in the sitting posture, that it never reaches the upper part of the vagina at all. When ulceration has taken place, cauterization, either by the nitrate of silver or by the acid nitrate of mercury, speedily effects a cure. The treatment of ulceration with induration of the cervix, is not so simple. It is thus stated by Dr. Bennett:—"In these cases,

\* It is but right to state, that since the above was written, the operation of ovariectomy has been strenuously supported by Mr. Atlee (*Amer. Journal of the Med. Sciences*, April, 1845,) in some remarks appended to an account of a successful case of abdominal section for the extirpation of a fibrous tumour of the uterus. (106.) The statistics of the operations, as stated by him, are the most extensive of any as yet on record, amounting to 101 cases, in which 38 died, or 1 in 2½. The causes of death in the fatal cases are from hemorrhage in 8, peritonitis in 8, exhaustion in 2, inflammation of large intestines in 1, gangrene 2, peritonitis and gangrene 1, causes not stated 16, total 38.

† *Lancet*, April 5, 1842.

‡ *Medicische Zeitung*, No. 30, 1844.

§ *Lancet*, May 3 and 10, 1845.

|| *Lancet*, Nov. 9, 1844.

cauterization may in general be resorted to at once, but if speedy benefit does not ensue, the repeated application of leeches to the uterus itself is to be advised." Of the latter proceeding he speaks in the highest terms, as a means of all others the most potent in removing the engorged and indurated condition of the parts. If this plan does not succeed, we may then try what can be done by deep cauterization with the Vienna paste, or by inunction with iodine ointment. For rules, by which the application of the caustic is to be regulated, we refer the reader to the original paper.

The subject of ulceration of the cervix uteri is likewise treated of in the *Annales de Thérapeutique*, Avril, 1845, (103,) and by M. Péraire, in the *Gazette Médicale*, No. 7. This author agrees with Dr. Bennett in the great serviceability of cauterization in the complaint, and writes for the purpose of recommending the performance of the operation "coup sur coup," that is, at short intervals. The duration of this mode of treatment, necessary for the cure of the different forms of ulceration, is thus stated; in simple ulceration, 16 or 17 days; in the granular ulcer, from 25 to 40 days; in ulcerations combined with induration of the cervix, from 4 to 5 months.

The profession is much indebted to Dr. Bennett for the perspicuity with which he has treated the subject of uterine ulcerations; a department of pathology too much neglected in this country. If his remarks, which we are glad to see are about to appear in a separate form, induce the British practitioner to inquire more deeply than he is accustomed to do into the causes of uterine symptoms in the unimpregnated state, and to treat them less by guess work, he will be the means of conferring no slight benefit upon the community; for we are convinced that these undiscovered, because unlooked for, affections of the female reproductive organs, are the cause of more moral and physical disturbance, than those to which any other part of the human frame is subject.

7. *Amputation of the cervix uteri* has lately been performed by Dr. Montgomery,\* for cauliflower excrescences. The operation was performed by ligature, which Dr. Montgomery considers preferable in all cases to the knife, as even where it fails to effect a cure, it is productive of much advantage, by moderating those wasting discharges which mainly contribute to the fatal termination of the disease.

8. *Extirpation of the uterus.* Two cases in which the entire uterus has been successfully removed by ligature, for inversion, are related by Dr. McClintock,† and the operation by incision has been unsuccessfully performed by M. Mollet,‡ for supposed inversion. In the latter case, however, the examination proved that the diagnosis had been erroneous, as the supposed inverted uterus was nothing more than an enormous polypus, which had dragged the womb out of its situation. Some excellent remarks on the diagnosis of inverted uterus and polypus, will be found appended to the notice of the memoir of M. Mollet, in the *Edinburgh Monthly Journal*, for which we refer to the Abstract. (104) It is generally admitted, that in ordinary cases, the distinction between these two affections can be made out with tolerable certainty; the possibility of encircling the neck of the tumour in the one case, and its uninterrupted continuation with the vaginal walls in the other, being sufficient to enable us to avoid error; but, as the Editor of the journal from which the notice of this memoir is taken justly observes, when the polypus springs from the edge of the os uteri, this valuable sign is rendered useless; for we cannot in this case trace the peduncle of the polypus encircled by the os uteri, and even if we are able to feel a portion of it, it is so altered in form and situation, as with difficulty to be recognized. The diagnosis in these cases is, as the Editor states, rendered more easy by the introduction of the uterine sound, upon the plan proposed by Dr. Simpson, by which means we can ascertain the presence of uterine cavity, and consequently form an idea of its shape and situation. M. Lisfranc recommends, in doubtful cases, the introduction of a curved catheter into the bladder, with the concavity downwards;

\* Dublin Journal, Jan. 1845.

† Edinburgh Monthly Journal, April 1845.

‡ Dublin Journal, March 1845.

if the case is one of inversion, the point of the instrument will be readily felt by the finger passed into the vagina. The same surgeon, however, places more confidence in an examination per anum, than in any other. If the uterus be inverted, a void will be perceived in its usual situation; if the vaginal tumour be a polypus, on the contrary, the perception of a second tumour will announce that the uterus occupies its usual situation.

9. *Prolapsus uteri*. Professor Chaumet,\* of Bordeaux, has suggested a new method of cure in displacements of the womb, which appears to be, for the most part, a modification only of that formerly recommended by Marshall Hall. This, as may be remembered, consists in removing a portion of the vaginal mucous membrane, and uniting the edges of the incision by suture. M. Chaumet likewise makes this proceeding the initiatory part of his operation, but in addition excises a portion of the whole of the cervix uteri. There is nothing in this operation which can render it in any way preferable to that upon which it is suggested as an improvement; on the contrary, the great success by which the latter has been followed in the hands of Velpeau, Dieffenbach, Fricke, and other continental surgeons, as well as in this country under Drs. Hall, Heming, and Ireland, would tend, in our opinion, to stamp the modification proposed by M. Chaumet as a proceeding of the most unjustifiable severity.

10. *Diseases of the vagina*:—*Vesico-vaginal fistula*. This afflicting accident has lately been made the subject of a lengthened discussion at the Académie des Sciences Médicales (Séances, Fév. et Mai, 1845) on the presentation of a memoir by M. Berard, upon an operation for its removal, which was originally recommended by Vidal de Cassis. This operation, to which the term "*infibulation*" has been applied, consists in the obliteration of the vagina, by dissecting off its mucous membrane, and bringing its walls into opposition by sutures. The objections to this extraordinary operation are sufficiently obvious; and we need only mention the retention of the menses which must ensue, to say nothing of depriving the female of the attributes of her sex, to convince our readers that it would not obtain a moment's consideration among British surgeons. Strange to say, however, the operation was defended by M. Velpeau. MM. Dubois and Moreau more justly pronounced the proceeding as irrational.

11 A case of *laceration* of the vagina during labour, with the escape of the fetus into the abdominal cavity, is reported by Mr. Oliver,† and a second by Mr. Graus.‡ The latter is chiefly remarkable for the mode of treatment which it was thought proper to adopt in order to combat the consequences of the peritonitis which ensued, and which consisted in injecting the peritoneal sac through the rent in the vagina, and withdrawing the purulent accumulation which had taken place by means of a syringe and œsophagus tube. The patient survived this extraordinary proceeding, and moreover sustained the additional operation of an incision in the lumbar region, for the purpose of liberating the purulent matter which had accumulated in the neighbourhood of the kidneys. In the discussion which ensued upon the relation of this case, it was reasonably doubted whether the vast collection of pus was not contained in the pelvic and lumbar fascia, rather than within the cavity of the serous membrane. (115)

## § II. Diseases of Pregnancy.—*Latour*.—*The Puerperal State*.

12. *Pregnancy*. *Obstinate vomiting*. There are few practitioners who have not experienced difficulty in allaying the distressing vomiting of pregnancy; and, indeed, examples are not wanting in which the irritability of the stomach has resisted all treatment for so long a time, that the female has sunk from the exhaustion consequent upon the want of nutrition. It is in these cases that M. Chailly§ has lately confirmed the safety and success of inducing premature de-

\* Bulletin de l'Académie Royale de Médecine, reported in Medical Times, April 12th, 1845.

† Lancet, November 1844.

‡ Bulletin de l'Académie Royale de Médecine Belge, 1844-1845, No. 1, p. 3.

§ Gazette Médicale, Mars 1845.

livery. Of the propriety of this proceeding, when milder means have failed, there can be no doubt. From the period of its first introduction by Dr. Denman, to the present time, it has been performed sufficiently often, and by men whose names are a sufficient guarantee for its rationality (Burns, Merriman, Davis, Blundell, &c.) to enable us to recognize it as one of the occasionally necessary expedients of practical midwifery.

13. *Extra-uterine foetation.* Several additional examples of this unusual occurrence have occurred within the last few months, two of which are peculiarly interesting, from the similarity of their termination. The first of these is recorded by Mr. Hemard,\* and is that of a female, æt. 38, who exhibited the principal signs of pregnancy, and among others one which is said (Rigby, *System of Midwifery*, p. 72,) to be generally absent in extra-uterine gestation, namely morning sickness. At the end of nine months the uterus assumed an expulsive action, and the decidua was thrown off; after which the female gradually recovered, and remained well for three years, when she again applied to Mr. Hemard in the last stage of marasmus, having passed one or more fetal bones by the urethra, encrusted with calcareous matter. Upon examination after death, the bones of a foetus were found in a cyst, which had contracted adhesion with the bladder, with which viscus it communicated by two ulcerated openings.

The second case, which is one of the same kind, is reported by Dr. Leitch.† In this case the woman applied with symptoms of stone in the bladder, but died before the extraction could be undertaken. The calculus was found after death to be composed of triple phosphate, having for its nucleus a fetal tibia. The remainder of the bones were contained in a cyst, which, as in the former case, had contracted adhesion to the bladder.

The third case which we have to allude to is one of supposed fallopian pregnancy, which occurred in the practice of Mr. Waddy of Birmingham, and is published in the *Prov. Medical Journal*, April 12. The woman died with symptoms of peritonitis, but no signs of the existence of inflammation were discovered after death. The tumour in the fallopian tube was composed of hydatid cysts, and the uterus contained a five-months' foetus, so that the case was looked upon as one of twins, the second foetus being extra-uterine.

There are also two other cases mentioned in the *Gazette des Hôpitaux*, Mai 6, 1845; one which occurred in the practice of M. Velpeau. From the other in which, as in the case above mentioned by Dr. Leitch, the patient applied for relief from symptoms of calculus, M. Morlane of Metz removed from the bladder a scapula, humerus, lower-jaw, and a portion of one of the bones of the cranium.

14. *Uterine hydatids.* An instance of this affection which is chiefly valuable as affording direct proof of its connexion with impregnation, is recorded by Dr. Mitchell.‡ The female, as is usually the case, suffered more severely than common from the early symptoms of gestation, and was supposed at the time of examination to be about a month gone, as previously to that time her catamenia had occurred with perfect regularity. The uterus, however, enlarged with such rapidity that the opinion of natural pregnancy was rendered untenable; but the exact diagnosis was obscure, as the absence of any watery discharge, and the escape of pure blood led the attention away from the contemplation of an hydatid formation. At the expiration of about six weeks, the contents of the uterus were expelled, in the shape of an immense body of *racemose acephalocysts*. Hemorrhage and other pains ensued as in natural labour, and the woman subsequently died of peritonitis. On examination after death, the uterus was found precisely in the condition seen a few days after natural labour, and the left ovary exhibited a perfectly developed and recent *corpus luteum*.

15. *Labour and its complications.—Distorted pelvis.* Where the diameter is less than three inches, M. Moreau§ advises the attempt to stint the growth of

\* *Lancet*, November 1844.

† *Edinburgh Monthly Journal*, February 1845.

‡ *Medical Examiner*, Nov. 2, 1845.

§ *Practical Treatise on Midwifery*. Translated by Dr. Betton. Philadelphia, 1844.

the fœtus, by submitting the mother to a debilitating regimen. He affirms that by this plan a full-term child may be caused to be as small as one of seven months. This opinion, it may be remarked, is opposed to that of the generality of observers, and is also refuted by the fact, that the most debilitated women and even some in the last stage of phthisis, often give birth to large and plump infants.

16. *Malformation of the uterus.* The impediments which an unusual conformation of the uterus may occasion to natural labour, is shown in a singular manner in a case which is recorded by M. Lecluyse.\* The subject of this malformation was a small female, who had previously been twice confined with an arm presentation. The occurrence of the same accident for the third time caused the accoucheur to make a minute examination, in order, if possible, to find an explanation of so unusual a circumstance. The result of the investigation was, the womb, instead of being of the natural pyriform shape, had its greatest diameter in a transverse direction; so that the long axis of the elliptic form which the fœtus occupies in utero was horizontal. This anomaly was thought by M. Lecluyse to account for the three consecutive arm presentations.

17. *Laceration of the uterus.* Two cases of complete separation of the cervix uteri during labour may be found in the periodical press of the last six months; one which presented itself to Dr. Davist of Newry; the other to Dr. Reardon.† A third and most marvellous case occurred to Dr. Morgan,§ Penn., in which the ruptured uterus formed a fistulous communication with the lower bowel, the fœces passing per vaginam for a period of thirty days. The female recovered, and the bowels resumed their natural action.

The process of parturition is not only subject to interruption from causes dependent upon the mother, but is likewise greatly influenced by certain circumstances attendant upon the fœtus. Among the first of these which we shall allude to is,

18. *Sex of the child as influencing the duration of labour.* A most interesting and elaborate paper upon the subject has been furnished by Dr. Simpson,|| in the course of which he proves by statistical data, that the danger, both to the mother and the child, is greater in the case of male births than in female. For the tables upon which this fact is established, we refer to another part of the work (109;) we shall content ourselves in this place with the statement, that the author explains the circumstance upon the ascertained fact that the head of the male infant at birth is one-eighth larger than that of the female. That such is the true explanation is probable from the circumstance as shown by Dr. Simpson, that in premature births, and still-born putrid children, the proportion of maternal deaths is equal for the two sexes; in the birth of a living child at term on the contrary, they are as two to one.

19. *Malformations.* Among the malformations of the fœtus which may offer an impediment to parturition, the only one which offers any interest is the discovery by M. Bouchacourt¶ of a peculiar hydatid degeneration of the kidney caused, as he believes, by an arrest of development consequent upon the obliteration of the ureter. The author adduces a case in which this malformation had gained such dimensions, that puncture was necessary, in order to complete the labour. The same disease had been previously noticed by Rayer, and has recently been illustrated in a paper by Dr. Cormack.\*\*

20. *Influence of shortness of the cord on labour.* A memoir has been presented to the French Academy of Medicine, by M. Hirtz,†† of Strasbourg, which enters very fully into the consideration of this source of difficult labour. The author believes with Mauriceau and many of the older writers, that shortness of the

\* Annales de la Société Médicale d'Anvers, et Journal de Chirurgie, Mars 1845.

† Dublin Medical Press, Jan. 15.

‡ Ibid., March 19, 1845.

§ American Journal of Medical Sciences, April 1845.

|| Edinburgh Monthly Journal, Jan. 1845.

¶ Gazette des Hôpitaux, Fév. 1845.

\*\* London and Edinburgh Monthly Journal, Jan. 1845.

†† Gazette Médicale, Mai 10, 1845.

funis, whether original, or secondary, from circumvolution, is one of the causes of impeded labour, and warrants in all cases in which it can be ascertained, the use of the forceps. This condition of the cord may be recognized, according to M. Hirtz, by the alternate descent and ascent of the head occasioned by the uterus, when it ascends after the cessation of a pain, dragging up the fetus. M. Danyau and Capuron, who reported upon the foregoing memoir, agree with the generality of writers in refusing to admit shortness of the cord as an impediment to labour, and likewise deny the value of the symptoms laid down by M. Hirtz, rationally concluding that the ascent of the foetal head, which is so general an occurrence in all natural labours, is due to the subsidence of the expulsive effort of the uterus and its consequent relaxation, and is totally irrespective of the length of the cord.

It may likewise be here observed that the effect of circumvolution of the cord upon the life of the child, has been investigated in an inaugural thesis by Dr. Mayer,\* of which a notice will be found in the *British and Foreign Med. Rev.*, April 1845, p. 546. It does not appear from the statistics added by the author that the occurrence is a source of great fatality to the infant, for of 185 cases in which circumvolution was ascertained, death was attributed to that circumstance alone, only in 18; 73, however, were born in a state of asphyxia.

21. *Shoulder presentation*.—M. Walter† has met with an instance in which the above preternatural presentation occurred in six successive labours. The circumstance is explained by him upon the fact that the female having an extraordinary wide pelvis, the uterus would naturally take a greater lateral development than usual, which, as he observes, would cause the fetus as in the case above related by M. Leclayse to assume a position with its long diameter horizontal.

In connexion with the subject of preternatural presentations, we may remark that Dr. Douglas‡ has published a third edition of his work on *Spontaneous Evolutions*, in which, however, no new information has been added to that which his former editions have rendered familiar to the obstetrical practitioner. Of the truth of the author's explanation of the process, there can be no doubt; indeed, we may say, that it is the one now generally adopted. The only recent instance of the phenomenon is, that recorded by Dr. Sussewind, in No. 23 of *Casper's Wochenschrift*. When first seen the right upper extremity projected from the external parts; the pains being so violent that turning was impossible. Dr. Sussewind having taken some blood, the woman said that she felt the child advancing, and, in fact, the shoulder was forced beyond the vulva, the lower extremities and buttocks at the same time turning into the hollow of the sacrum. Soon the right ramus of the lower jaw came in sight, the shoulder and arm having receded. But little effort was then required to disengage the breech, upon which the child was quickly born, but dead.§

22. *Uterine hemorrhage*. The subject of hemorrhage during parturition has of late attracted considerable attention, from the proposal,—the priority of which is disputed by Professor Simpson,|| of Edinburgh, and Dr. Radford,¶ of Manchester,—to extract the placenta before the child, as a substitute for the ordinary practice of delivery by turning. We shall not stay to animadvert upon the controversy to which this proposal has given rise, but proceed at once to inquire into the merits of the operation itself. Hemorrhage from placental presentation, is, as is well known, one of the most fatal complications to which the parturient woman is subjected, the deaths being one in every three cases according to Dr. Simpson. If this be the result of treatment by the ordinary practice of turning, it cannot be controverted that there is ample room for improvement. That an

\* De circumvolutionibus Funiculi umbilicalis fetus vite haud raro infectis, &c. Proponit G. A. Mayer. Heidelbergiæ, 1842.

† Neue Zeitschrift für Geburtskunde, 1844.

‡ An explanation of the real process of Spontaneous Evolution of the Fetus. Dublin, 1844.

§ Reported in American Journal of Medical Sciences, April 1845.

|| London and Edinburgh Monthly Journal, March, 1845.

¶ Provincial Medical Journal, Feb., March, 1845.



improvement in this respect is really offered in the proposition to extract the placenta before the child seems to be established by the data accumulated by Dr. Simpson, the mortality being reduced from one in three to one in fourteen. It appears also that, however alarming the hemorrhage may be, it ceases immediately the placenta is extracted; in fact, out of 111 cases, in five only did the bleeding continue so profusely as to cause apprehension. We may, therefore, taking for granted that the facts are correct, fairly assume that Dr. Simpson has established his position as regards the mother; but the maternal life, though confessedly of primary importance, is not the only consideration; we have also to take into account the effect of this innovation in practice upon the life of the child. We are not aware of the existence of statistical facts in any number by which we may judge of the amount of infantine mortality under the operation of turning, but as far as we may come to any conclusion from the results of the practice of a single individual,\* the children saved may be stated to be one in four. Now, if the placenta be extracted before the child, it must be almost inevitably at the cost of its life, for unless the uterus expels it in the space of a few minutes, it must die asphyxiated from the disruption of its connexion with the source of the oxydation of its blood—the maternal circulation. In so far then as the infant is concerned, the new practice must be looked upon as slightly inferior to the old, since it induces its almost necessary extinction. The question, however, as it appears to us, may be thus plainly stated:—Which of the two is the better, an operation which saves one child in four, assuming from want of data that is the proportion, but allows the sacrifice of one mother in three, or that by which (say) every child is lost, but by which only one mother in 14 perishes? There can be little doubt but that the smaller sacrifice of life, abstractedly considered in the latter case, taken in connexion with the higher value of the mother, justifies us in preferring the new to the ordinary practice. But this estimate of the new operation is arrived at by regarding it as inevitably fatal to the child; if, however, we reflect that in a certain proportion of cases the child will follow immediately upon the expulsion or extraction of the placenta, and thus be born alive—its destructiveness to infant life, which for argument sake we had allowed, is greatly diminished.

Among the means lately recommended for the suppression of uterine hemorrhage in general, we may mention two: galvanism as employed by Dr. Radford, and compression of the abdominal aorta by M. M. Sentin,† Chailly,‡ and others. We shall not needlessly occupy our limited space by dilating upon the former expedient, but refer the reader to our abstract, in which Dr. Radford's communication will be found at length. (113) *Compression of the abdominal aorta* was first introduced by Saxtorph (*Dissertatio de Hemorrhagia partu insequentis*), and has since been successfully practised by Baudelocque and others. Minute directions for the due maintenance of the pressure are given by M. Sentin. (114) M. Chailly prudently refuses to rely entirely upon the pressure, but advises at the same time other means of undoubted efficacy, such as the ergot and the administration of cold enemata. The latter expedient is scarcely, we think, sufficiently appreciated in this country.

23. *Operative midwifery:—turning.* On this mode of extracting the fœtus, we find during the last few months remarks by Professor Simpson§ and Mr. Dalton.|| The former writer discusses the question whether it is advisable to endeavour to seize both feet, or only one. He decides, with Puzos, that the latter is the better proceeding, because we, by using traction upon one leg only, "more nearly imitate the natural oblique passage of the breech of the infant." In no case, says Dr. Simpson, should we deliver by both feet, excepting in rupture of the uterus. This opinion, it may be observed, is not in correspondence with that of the majority of accoucheurs. (Vide *La Chapelle*, p. 93, *Rigby's System of Midwifery*, pp. 150, &c.)

\* Vide Mr. Watson's Report of Obstetric Practice. Provincial Medical Journal, Dec. 2, 1844.

† Bulletin de l'Acad. de M<sup>d</sup>. Belgique.

§ Edinburgh Monthly Journal, February 1845.

|| Op. cit. p. 475.

¶ Lancet, April, 12, 1845.

Mr. Dalton recommends a plan of turning, where the introduction of the whole hand is impossible, which he believes to be original. It appears, however, rather to be a mode of assisting spontaneous evolution, than one of turning, properly so called. Being summoned to a case in which the arm was presenting beyond the os externum, and finding it impossible to gain admission into the uterine cavity, he, before having recourse to any more severe means of delivery, determined to adopt the plan which we shall give nearly in his own words:—"I passed the index and middle fingers of the right hand to the occipital protuberance of the child, and found that I could raise the head upwards, and towards the left, in which position I succeeded in maintaining it after the subsidence of the pain, by the use of the index finger of the left hand. I now pushed the head of the child still further up with the fingers of the right hand, supporting the trunk during the pains with the left; and during the remissions, thus passed successive portions of the spinal column towards the left ilium of the mother, until I caused the breech to descend, when the birth was quickly completed."

24. *Casarean section.* Several cases of this severe operation have been lately recorded, which we shall briefly allude to. The first is related by Dr. Prael,\* and is remarkable not only for its perfect success, but from the fact that in a subsequent pregnancy, the incision was spontaneously ruptured, the child being extracted through the abdominal walls. Both mother and child recovered. Two successful cases are also to be found in a late number of the *Gazette Médicale*,† In a fourth operation performed by M. Vanhauvel,‡ the mother died, the infant was saved. A fifth proved successful in the hands of Dr. Bresciami.§

25. *The Puerperal state—Puerperal fever.* The *Provincial Journal*|| contains several papers in which this important disease is carefully reviewed by Dr. Blackmore, who subscribes to the opinion, now very general, that it has, in its more fatal form at least, the closest analogy to typhoid erysipelas. The same view is likewise taken by Mr. Symonds,¶ to whom we are indebted for an excellent paper upon the subject, and by Mr. Storrs. Mr. Symonds, however, in acknowledging the erysipelatous nature of the epidemic fever, agrees with the general experience of the profession, that there is a form of the disease which is purely inflammatory, and which, according to him, may attack all the tissues of the uterine organs indiscriminately. The same writer speaks also of a third form which he calls remittent puerperal fever, but which appears obviously to be nothing more than *intestinal irritation* occurring in the puerperal state. Mr. Storrs, after alluding to three distinct classes of infectious or contagious diseases, which from time to time occur in the animal economy, proceeds to lay down the following important proposition:—

"That puerperal fever is capable of imparting to any person, not in the puerperal state, by actual contact, or close approximation, any of the following diseases:—1. Inflammation of the peritoneum, or other serous membranes, accompanied by a low type of fever. 2. Erysipelas, either *local*, such as occurs from dissection wounds, or *general*, as on the face or person. 3. Typhus fever with various accompaniments, and in a variety of forms."

In illustration of each of these propositions, several cases are adduced which clearly justify the author's assumptions; those under the second head are peculiarly interesting, and should afford a wholesome caution to the accoucheur both as regards his own person and the welfare of his next puerperal patient.

The treatment of puerperal fever is judiciously laid down both by Dr. Blackmore and Mr. Symonds. In the sthenic form of the disease, bloodletting is to be considered as the most important item in the treatment; but in the second, or erysipelatous form, it requires to be used with great caution. We question much, however, whether general bleeding is ever a justifiable practice in the latter case, even to the small amount of four ounces as recommended by Dr. Blackmore; we

\* Philadelphia Medical Examiner, April 1845, from Dublin Journal.

† Mai 10, 1845.

‡ Annali Universali di Med., Dec. 1844.

§ Lancet, May 17, 1845.

|| Encyclographie des Sciences Méd., Mars 1845.

¶ March, April, and May 1845.

should put more faith in the extensive dry cupping alluded to by him, followed by sedulous fomentation of the abdomen. The great advantage of an early recourse to stimulants and tonics is distinctly shown in a case referred to by Mr. Symonds.

26. *Phlegmasia dolens*. M. Rostan,\* agrees with Dr. Lee and others, that the proximate cause of this affection is the obliteration by coagula of the femoral vein; he differs, however, from that eminent physician, in seeking an explanation of the coagulation unconnected with inflammation. He alludes to the fact ascertained by Becquerel and Rodier, that in the puerperal state the blood undergoes certain modifications, the principal of which is a diminution of the globules, with relative increase of the fibrin. In consequence of this change, the blood assumes an unnatural disposition to coagulate. The direct formation of coagula he explains by the retardation of the blood caused by the pressure of the foetal head upon the iliac veins; that this explanation is the correct one, he thinks is rendered probable by the more frequent occurrences of the disease in the left leg.

27. *Puerperal rheumatism*. M. Piorry† has endeavoured to ascertain whether the rheumatism which he has frequently seen to attack lying-in-women, has not something of a special character. The result of his inquiries seems to be, that it differs from ordinary rheumatic arthritis in the smaller frequency of cardiac complication, and in its tendency to induce suppuration in the synovial capsules.

28. *Puerperal convulsions*. An admirable paper upon this subject appeared in the *Lancet*‡ at the close of the last year, a condensed statement of which will be found in another place. (116) The chief merit of the communication consists in the lucid manner in which the doctrines of the excitomotor system are brought to bear upon the affection. The author justly criticises the opinions, that the convulsions depend upon cerebral congestion because that is the only or chief post-mortem appearance. There is, in our opinion, no more frequent error committed in the deductions derived from pathological appearances, than the one in question. It is apparently forgotten, that from the peculiar circumstances under which the brain is placed as regards atmospheric pressure, &c., that congestion of the venous system is a natural appearance, and that, if the head be opened before the thorax, this appearance is always more decided than when the case is reversed. From want of reflection upon these facts, it has frequently occurred to us to hear a state of brain pronounced to be pathological, which is the natural and inevitable consequence of the physical conditions of the organ. But to return to the subject of puerperal convulsion: the author very properly states, that the proximate cause is not to be sought in the brain, but in the spinal marrow, and that the disease is in all cases due to irritation of that part, together with the medulla oblongata. He does not deny that the convulsions may occasionally arise from effusion of blood or vascular congestion, but as he correctly remarks, these cases are not sufficiently common to form the basis of a theory. Were it so, the fits should always arise at a time when cerebral congestion is the most pronounced, as in the second stage of labour. But this, common experience teaches us is not the fact. The only correct mode of viewing the causes of convulsion is, we fully believe, that propounded by the author, viz., that they are of two kinds, the one acting directly upon the spinal marrow, and therefore of *eccentric* origin, such as congestion, anemia from loss of blood, and emotion; the other class of *eccentric* origin, which consist in irritation of the incident fibres arising from the uterus, intestines, bladder, stomach, &c.

The same affection has also been made the subject of a communication to the Scandinavian Naturalist's Society, by Dr. Blich, of Drammen.§ The results of this observer's experience in the disease is as follows:—He had witnessed it only 8 times in 396 labours. Of these, three were during pregnancy, three during labour, and two immediately after the birth of the child. The mothers were

\* Gazette des Hôpitaux, 3 Mai, 1846.

† Nov. 30, and Dec. 6, 1844.

§ Bibliothek für Læger. By Dr. Otto, 1844.

† Ibid. 29, Avril, 1844.

all between 25 and 30 years of age, and five were primiparæ. Of the children, four were born alive, three were supposed to have died during or immediately after the first convulsion, as the fetal heart ceased to be heard at that time. It may be observed that, according to Chailly,\* the mortality of the child is one-fourth; La Chapelle places it as high as one-half. All Dr. Blich's cases were, as is generally the case, head presentations.

29. *Lactation.* In connection with this subject, Dr. Witt† remarks upon the impropriety of postponing the attempt to obtain a development of the nipple, in those cases in which it is small and buried in the breast, until nursing becomes immediately necessary. He advises, on the contrary, that the breast should be examined early in pregnancy, and that where it is necessary, the appropriate treatment should be at once commenced. The proceeding which Dr. Witt recommends for the purpose is exceedingly simple. The breast is first to be fomented until the nipple becomes turgid, when an India-rubber bottle, accurately fixed upon a box-wood nipple shield, is to be applied. The re-expansion of the compressed bottle acts in the same manner as the exhausting syringe.

30. A remarkable appearance, first described by Rokitsansky as occurring in puerperal women, has lately been investigated by M. Ducrest.‡ The appearance alluded to consists in a laminar exostosis, which springs from the internal table of the skull. The author is obviously unaware of the priority in discovery due to Rokitsansky, and for this reason his observations are of the more value, as they correspond exactly with those of the above-named writer. It seems that the affection is most common in primiparæ, but is chiefly worthy of notice as a medical curiosity, for it has never been traced to any direct cause, neither has it any connexion with symptoms which can be considered as indicative of its presence.§

### § III.—Diseases of Children.

31. *Diseases of the fatus.* Our information with respect to the morbid affections incidental to intra-uterine existence, has not been materially advanced during the period embraced in our Report. The only notice connected with this department of pathology which we have met with, is that by M. Hamel,|| on obesity of the cord; by which he means such a development of adipose tissue as to interrupt the umbilical circulation, and thus cause the death of the fœtus. This fatal accident, according to the author, is principally observed in those women who, from being thin, suddenly become very fat under the influence of pregnancy. The time at which the death of the child generally occurs is about the sixth month. The practical deduction drawn by M. Hamel is, that great obesity in the mother is dangerous to the fœtus, and should be prevented by appropriate regimen.

32. *Diseases of infancy.* The diseases of infancy and childhood have been recently illustrated in two separate monographs, one by M. Bouchut,¶ the other by Mr. Hood.\*\* Both of these writers acknowledge the great difference which exists between the diseases of the child and adult, more particularly as regards the effect of antiphlogistic treatment. The special object, in fact, of the latter work, is to point out the necessity of regarding the diseases of the infantile period as depending less upon inflammation than irritation. The author strongly deprecates the common practice of flying at once to leeches and other antiphlogistic treatment, upon the slightest excitement of the circulation in childhood, without reflecting that there is scarcely a single inflammatory affection, whether of the brain, lungs, or other organ, which may not be closely simulated by irrita-

\* Op. cit.

† Neue Zeitschrift für Geburtskunde, E. xvii, 1 cahier.

‡ Mémoires de la Société Médicale d'Observation de Paris, tom. ii.

§ After the above was written, we have seen an elaborate microscopic notice of the affection, in the January number of Müller's *Archiv für Anatomie*, and of which we shall give an analysis in our next volume.

|| Lancet, April 5, 1845; from the Académie de Médecine, Séance Fev. 1845.

¶ Traité Pratique des Maladies des Enfants, &c. Paris, 1845.

\*\* Practical Observations on the Diseases most fatal to Children. London, 1845.

tion arising from the teeth, or the condition of the stomach and bowels. Without denying that the author may, in his anxiety to avoid one error, be in danger of too closely approaching the opposite, we most cordially record our assent to his views in the abstract; and we believe that, if they were more generally adopted, the result would be a considerable saving of infant life.

In connexion with this manner of regarding infantile diseases, we refer the reader to Article 121, which contains some important observations respecting the employment of stimulants in the pulmonary diseases of children. The question is one of great importance in practice, for there is in all cases of these affections, a time at which the further persistence in antiphlogistic treatment, however necessary it might have been at first, assuredly precipitates the fatal event. To be able, therefore, to distinguish the period at which it is not only safe but necessary to resort to a stimulating plan of treatment, must be highly desirable. In the paper alluded to, the symptoms indicating the necessity for the change are stated to be a pallid and sunken state of the countenance, with fluttering pulse, and increased frequency of respiration; but these are not in our opinion sufficiently decisive in themselves to obviate the danger of an injudicious perseverance in debilitating treatment. We are rather disposed, in accordance with the opinion expressed by Dr. West,\* in his admirable *Report on the Pneumonia of Children*, to regard stimulus as necessary in all cases in which bronchial respiration is present when the patient is first visited, or becomes so in spite of an average amount of antiphlogistic treatment; and especially when at the same time the bronchial tubes are clogged by mucous secretion. It is under these circumstances, we are aware, that many practitioners advise the persistence in the exhibition of antimony in increasing doses; but we have learned by experience, as doubtless many others have likewise, that although this plan may be safe in the adult, it is not so in the child; that it is, on the contrary, apt to induce the most fatal prostration, even without the occurrence of vomiting or perceptible nausea. If we were to be guided by the results of personal observation, we should say that it is seldom safe to persevere in an unmixt antiphlogistic line of treatment in a child under three years of age, for longer than three or four days; and that, especially if blood-letting has been employed, it will be necessary by this time to resort cautiously to a stimulating regimen. (123)

33. *Diet of Infants.* The proper food for an infant after weaning, and during illness, is always a source of doubtful discussion, not only among parents and nurses, but also among medical men. Dr. Stewart, in reference to this subject, condemns the practice of resorting on all occasions to a vegetable diet, as arrow-root, &c., for the simple reason that it must necessarily be assimilated with greater difficulty than animal food. He advises instead of these articles, the substitution of the jelly from isinglass, as it is less likely to induce acidity in the primæ viæ. The suggestion is a most useful one in cases of muco-enteritis, and other diseases accompanied by an irritable state of the intestinal mucous membrane. (120)

In the department of cerebral diseases of infancy, we have nothing of importance to communicate; indeed we may say that the whole range of infantile pathology has met with but little advancement in the period embraced by our Report. We shall proceed, however, briefly to notice a few recent communications upon the diseases of other regions.

34. *Aphtha infantum.* MM. Trousseau and Delpech† have devoted a long series of papers to this disease, the subject of which we shall endeavour to reproduce. In regard to the nature of the affection, the authors, after criticising the opinions of Billard, Lebit, Guersant, and others, propound their own, which is, that the muguet, or aphthous patches, consist of a fibrinous pseudo-membrane, situated on the surface of the digestive mucous membranes, deprived [in those spots? Ed.] of its epithelium. 1. *Seat of the disease.* This may be in the

\* British and Foreign Medical Review, April, 1843.

† Journal de Médecine de M. Beau, Jan. 1845. In Encyclopédie des Sciences Médicales, Fév., Mars, 1845.

mouth, pharynx, and œsophagus; occasionally, but seldom, in the stomach, small and large intestines. The opinions of MM. Valleix, Billard, &c., that the entire length of the intestinal canal may be occupied by the disease, is stated by the authors to be erroneous. 2. The *causes* are thus laid down:—These are of two kinds, the direct or local, and the general. Among the former the authors enumerate, want of cleanliness, the use of dirty spoons, teats, &c., and the ingestion of sour milk. The second class comprises the confined air of hospitals, contagion, and the puerperal diathesis. The latter, which shows itself in the mother by the occurrence of puerperal fever and phlegmasia dolens, exhibits itself in the child under the form of phlebitis of the cord, purulent ophthalmia and aphthæ. The authors likewise observe with M. Valleix, that the appearance of aphthæ frequently complicates and adds to the danger of enteritis, but they differ from him in the value they attach to their presence; regarding them rather as a coincidence, than as necessarily connected with the disease. Aphthæ may likewise originate under the influence of certain cachexiæ. 3. *Symptoms.* Aphthæ infantum may assume two different forms, one mild, the other more severe. The first form commences with a dryness of the mouth and fauces, which is soon followed by the appearance of small granular eminences of variable colour. The mucous membrane at the same time puts on a velvety aspect, and the submucous tissues are frequently infiltrated with serum. The eminences above mentioned subsequently exhibit little whitish or fawn-coloured spots, some of which, in the course of a few days, coalesce in large patches. This white appearance is caused by the fibrinous exudation. The duration of this mild form of the disease is from eight to twelve days. In the second or more dangerous form, besides the appearances just alluded to, other and more dangerous symptoms supervene. The principal of these are obstinate diarrhea, erythematous patches principally confined to the thighs, and ulceration of the mucous membrane of the mouth, and of the inner ankles. The latter symptom is apparently caused by the chafing together of the parts, and is indicative of a very severe type of the disease. 4. *Treatment.* The treatment naturally divides itself into the preventive and the curative. As the disease is evidently more rife in crowded hospitals than in other localities, one obvious precaution is, to diminish the number of beds in those establishments. Suckling is also a great preservative, and exercises an indubitable influence upon the mortality of disease. Of 51 children who were affected, 29 were nursed by the mother, 21 were not; of the former only 7 died, of the latter 17. The influence of lactation, therefore, is highly beneficial. The local treatment consists in the employment of the bicarbonate of soda, and honey, in slight cases, and if this have not the desired effect, in the substitution of alum, or nitrate of silver, as a local astringent. The constitutional treatment recommended by the authors is as follows:—Ipecacuanha in emetic doses; bismuth and prepared chalk, or small doses of calomel, and carbonate of magnesia. If the diarrhea resists these remedies, they exhibit the fifth of a grain of the nitrate of silver, or one grain in the form of enema. To prevent the ulceration about the ankles, they should be protected by adhesive plaster.

Such is a very brief resumé of the authors' observations. Their principal value, as will be readily perceived, consists in the appreciation of the causes of the disease, and, more particularly, in tracing its connection with the same circumstances which in the mother give rise to the severer forms of puerperal fever. The description of the more fatal form of the malady will be new to the majority of British practitioners, as it is only in the crowded wards of the Hôpital des Enfants Trouvés, and similar institutions, that it ceases to be a simple and manageable complaint.

35. *Spasm of the glottis.* This is one of the diseases the pathology of which the invaluable researches of Marshall Hall upon the excitomotor system of nerves have mainly contributed to elucidate. In a work already quoted,\* Dr. Hall points out with great clearness the principal sources of irritation, and their remedies. Thus the irritation from dentition is to be met by free lancing of the

\* Practical Observations and Suggestions, &c. p. 24.

gums not confined to the apex of the alveolar processes only, but applied to their base. Indigestible food is to be removed by an emetic; the bowels are to be regulated by suitable purgatives; all causes of emotion are to be avoided; and, lastly, the morbid susceptibility of the patient is to be subdued by hyoscyamus and infusion of hops.

The enlargement of the thymus gland which has been made to play so important a part in the pathology of the disease by Kopp, and others of the German school, is declared by Dr. Hall to be the effect and not the cause of the convulsive breathing,—an opinion which has quite recently been supported by Mr. Simon,\* but with the addition of an explanation of the manner in which the enlargement takes place, which is perfectly new, and founded upon the physiological views of the uses of the gland, enumerated in the preceding part of his important work. As these views will be found in the Report on Anatomy and Physiology, we shall not dilate upon them in the present place, but shall allude to them only so far as may be necessary to render the explanation of the enlargement above mentioned intelligible. We may premise that the thymus gland, in the words of Mr. Simon, “is a sinking fund of nourishment in the service of respiration,” that is to say, it is an apparatus ordained by nature to be a reservoir of combustible materials, ready to be supplied to the support of the respiratory process at a time when muscular action, and consequently waste of tissue, is at its minimum. This being the case, if the respiration be permanently, or for a long time together interrupted, it must be obvious that as the fluid secreted by the thymus gland will not be duly carried off, it must by degrees accumulate in the central cavity of the gland. It is to this accumulation, according to Mr. Simon, that the enlargement of this gland is due, and not to the hypertrophy of its secreting structure. As the disease in question offers precisely the conditions under which this accumulation takes place, there can be no difficulty in believing that those pathologists who look upon the enlargement of the gland as the cause of the suffocative paroxysm are in error.

A very clear exposition of the diagnostic features of this disease will be found in a paper published in the *Lancet* by Mr. Meade. We may observe also, in the last place, that Dr. Baird, of Ipswich, in an interesting paper read before the last meeting of the Suffolk branch of the Provincial Medical Association,† called the attention of the audience to the dependence of the disease upon an anemic state of the system, and detailed cases in the paroxysms, after resisting the treatment which was instituted in reference to the existence of peripheric irritation, were speedily and completely subdued under the exhibition of iron, thus distinctly showing, as observed by the author of the paper, the source of the convulsion to be the effect upon the upper portions of the spinal cord of blood deficient in hæmotosin.

36. *Croup.* The value of tracheotomy in this disease has been much discussed of late, and although in this country it is regarded as almost an irrational operation, it has met with several supporters among continental physicians. The latest communications upon the subject are those by M. Thoret and M. Barrier;‡ the former has related a case in which the child was evidently relieved by the operation, but died through the negligence of the nurse; the latter writer, for the purpose of recommending as a new proceeding the use of the curved canula, apparently is unaware that it has been some time since introduced to the notice of the profession by Mr. Hilton, of Guy's Hospital.

37. *Nocturnal incontinence of urine.* M. Delcour recommends the nitrate of potash and the benzoic acid in this troublesome affection, and M. Berenguiet speaks in strong terms of pills composed of balsam of copaiba and the peroxide of iron. (31 and 32)

38. *Vesical calculus.* The expulsion of small calculi in infants has frequently been accomplished by M. Aberle,|| by means of belladonna used both internally

\* *Physiological Essay on the Thymus Gland.* London, 1846.

† May 31, 1845.

‡ *Gazette Médicale*, Fev. 1845.

§ *Bulletin Gén. de Thérapeutique*, Nov. 1844.

|| *Encyclographie Médicale*, Fev. 1845.

and in frictions on the perineum. The object which he seeks to obtain by this method is the temporary paralysis of the muscular fibres in the neck of the bladder. He relates several cases in which calculi the size of a pea were by this means expelled in the course of a few hours. The paralysis of the sphincter is quickly removed as soon as the medicine is withdrawn.

We have thus endeavoured to give a concise retrospect of the principal subjects of interest to the obstetric practitioner; many communications have been passed over, either because they do not possess any particular interest, or because they are published in a series which has not yet been completed.

The latter will be noticed in our next Volume.



## IV.

REPORT ON THE PROGRESS OF ANATOMY AND  
PHYSIOLOGY.

THE materials of which the Report on this department of medical science is composed, have, with very few exceptions, been selected from works published within the present year. From various unavoidable reasons it may happen that some contributions made to the subject of anatomy and physiology during the past few months, have been overlooked or unduly appreciated by the writer, and therefore not included in the present Report. It is hoped, however, that due allowance will be made for such omissions, the liabilities to which are so obvious.

§ 1.—*The Blood.*

1. Dr. G. O. Rees has recently offered some new views concerning the physical and physiological attributes of the blood.

1st. He has proved beyond doubt that the red corpuscles are vesicular, as is now generally supposed. Their vesicular character is clearly shown in the readiness with which they become collapsed or distended by increasing or diminishing the specific gravity of the medium in which they float. In order to collapse the corpuscles, a solution of sp. gr. 1060 is sufficient, but a solution of 1070 or more is required to produce a decided effect. Solutions cease to distend the corpuscles when of sp. gr. 1050 to 55, and to distend them when well a solution of 1015 or 10 is desirable. The sp. gr. of blood is about 1057 to 60; and since the corpuscles remain unaltered by solutions of from 1050 to 60, it may be concluded that the average sp. gr. of liquor sanguinis lies somewhere between these two points; and this proves that the fibrine of the blood is dissolved, and not merely suspended in the liquor sanguinis.

2d. He has also rendered decisive the question as to where the red colouring matter of the corpuscle is seated, proving it to be contained in the fluid within the vesicle, and that the envelopes themselves are white or colourless membranes. This is shown by increasing the sp. gr. of the liquid in which the corpuscles float, the result of which is the escape by *exosmosis* of the red coloured fluid from within the corpuscles;\* and again by applying water to the corpuscles, and so inducing *endosmosis*, the vesicles become distended and burst, their colouring matter mixes with the water, and their envelopes ~~side~~ to the bottom of the vessel, forming a white layer.

3d. By examining the white layer deposited in the manner just mentioned (in which, together with *granules* and shreds of membrane, are found numerous white bodies resembling blood corpuscles, though smaller;) and from analogy, he entertains no doubt that the red corpuscles contain nuclei, which however are so highly refractive of light, that they are not distinguishable in the corpuscles themselves. He describes the nucleus as being about  $\frac{1}{1000}$  of an inch in diameter, or  $\frac{1}{3}$  the size of the red corpuscle, in the centre of which it is situated; it is flattened and circular like the corpuscle, though it differs from it in not being rounded at its edge; it is adherent to the envelope only at its centre, leaving a canal all round its free edge, which canal contains the red colouring matter.

\* This is effected by a method somewhat similar to the one employed by M. Figuier for estimating the quantity of red corpuscles in the blood (British and For. Med. Rev., Jan. 1846, p. 264, Mr. Paget's Report.) M. Figuier's method consists in adding a strong saline solution, as of sulphate of soda, to the fibrinated blood, by means of which the corpuscles (their contents being exosmosed) will subside, and may be collected on a filter.

4th. The whole of the iron of the blood is contained in the red colouring matter; the envelopes and nuclei do not present a trace of it. The corpuscles obtain their iron from the chyle, the serum of which holds a large quantity of it in solution; the sp. gr. of the chyle is considerably lower than that of liquor sanguinis; consequently, when the former becomes mixed with the blood, it dilutes the liquor sanguinis, and so induces an endosmotic current rich in iron to enter the corpuscles. How the colour of the contents of the corpuscles is produced remains a mystery; it is within the red corpuscles alone that it is effected, there is no red colouring matter in lymph or chyle, any admixture of red corpuscles found in these latter is an accidental circumstance attending the mode of examination.

5th. Dr. Rees seems to admit the probability of the exudation and fibrinous corpuscles observed so abundantly in effused coagulable lymph, having their origin in the pale corpuscles of the blood, for he sees no difficulty in these pale corpuscles passing through pores in the blood-vessels which would not admit the red corpuscles; the latter he compares to bladders filled with fluid, and which are not capable of yielding until their membrane be ruptured, but the former being soft solids may be compressed like a sponge, and pass through an opening, the orifice of which is smaller than the corpuscles themselves.

6th. He justly condemns the coarse and necessarily inaccurate method hitherto pursued in the quantitative analysis of blood. Amongst other fallacies attending the present method, the corpuscles are estimated as hematosine alone, no allowance being made for the envelopes or nuclei. Again, a certain quantity of fibrine will be estimated as hematosine, because, as the fibrine of the liquor sanguinis coagulates, the sp. gr. of the medium in which the corpuscles float, becomes lowered, and the corpuscles will thus draw into their interior more liquor sanguinis, and so absorb a certain quantity of fibrine with which they will subside. When the fibrine coagulates slowly, the quantity thus disposed of, will be large, for each of the immense number of corpuscles will absorb a little. Again, all the water of the corpuscles should not be estimated as belonging to serum, because, although the corpuscles must have endosmosed some serum during coagulation of the liquor sanguinis; yet, in their natural condition they contain a fluid which is quite distinct from serum. To obtain pure hematosine by a method free from these fallacies, Dr. Rees recommends the corpuscles to be cleaned by repeated washings in a solution of salt and water, or sugar and water, the sp. gr. of which is equal to that of the liquor sanguinis, so that the corpuscles may be unaffected by endosmosis. When thus cleansed, they are to be moved into a vessel of water, the result of which is, that the individual corpuscles swell and burst, their colouring matter is discharged into the water, whilst the nuclei and envelopes subside as a precipitate; both ingredients are thus in a fit condition for estimation and further examination.

7th. In regard to *genesis*, or the original formation of blood-corpuscles, he considers that they multiply by division, for on examining a portion of blood maintained at about its natural temperature, he observed the corpuscles to assume an hour-glass form, which increasing, eventually divided each corpuscle into two unequal sized circular bodies, which, when treated with a strong saline solution underwent the same exosmotic changes as observed in common blood-corpuscles. When worn out, the blood-corpuscles become disintegrated and their debris exist floating in the liquor sanguinis. By diluting the serum of coagulated blood with water, a precipitate forms, consisting of the envelopes and nuclei of old corpuscles disintegrated; this disposal of the worn out corpuscles will account for the traces of iron occasionally found in the serum.

8th. Dr. Rees considers the explanation offered by Milder regarding the mode in which the change of colour from dark to bright red is effected in the blood during its passage through the lungs, to be entirely hypothetical and erroneous. Milder accounts for the change of colour from venous to arterial, and from arterial to venous blood in this way\* He supposes that "in traversing the ca-

\* Dr. Golding Bird, in London Medical Gazette, December 27, 1844.

capillary system of the lungs the proteine of the blood combines with oxygen, generating a compound analogous to "buffy-coat," which forms a contractile covering to the blood-corpuscles, causing them to become more opaque, and giving them the figure of doubly concave lenses; that in the general capillary circulation, this layer of oxyproteine surrounding the corpuscles is decomposed, the oxygen being used for dissolving old tissue, and the proteine deposited to supply its place. The corpuscles lose their reflecting concave figure, and become more transparent by this change. That the difference of colour between arterial and venous blood depends solely upon a physical difference in the surfaces of the corpuscles, being semi-opaque concave mirrors in the former, and more transparent convex bodies in the latter; and that during respiration the colouring matter itself of the blood undergoes no change, and indeed plays no part, either as a whole, or in regard to the iron which exists merely as a simple element in it." To these several views Dr. Rees is entirely opposed; he rejects the idea of a layer of plastic oxyproteine being deposited on the blood-corpuscles during respiration, and instead of considering the hematosine as undergoing no change, and maintaining the same condition in arterial and venous blood, he looks upon it as being the cause of the change in the colour of the blood in virtue of some chemical alteration which takes place in it. In this view he agrees with Liebig, though he does not adopt the explanation offered by this chemist as to the nature of this alteration. According to Liebig, the change in colour observed to take place during the passage of venous blood through the lungs is due to the formation of a carbonate of the peroxide of iron in the red corpuscle, which, during the passage of arterial blood through the system, is resolved into carbonate of the protoxide, by the abstraction of oxygen for the general purposes of the system, and thus the dark colour is again restored to the blood. This hypothesis is mainly disproved by the impossibility of obtaining any trace of an oxide of iron from the red corpuscles by treating them with a weak acid, by there being no difference in the quantity of oxygen in arterial and venous blood, and by all the iron admitting of extraction from the hematosine, without the other chemical constituents of the hematosine being interfered with, and especially without any diminution in the quantity of its oxygen being effected. What may be the nature of this change, therefore in the hematosine [if any does really exist] on which the alteration in the colour of blood depends, remains still a mystery.

Having accounted for the change in colour in the blood whilst in the body by the alternate deposition and removal of a layer of plastic material by which an alteration in the form of the corpuscle is produced, and the change in colour follows as an optical effect, Mûlder proceeded to explain in a similar manner the changes in colour undergone by the blood under various circumstances out of the body, such as result from exposure to the action of saline solutions of water and other reagents; in all these cases he considers that an alteration in the figure of the corpuscle is the cause of the change in colour observed, and that anything which produces this alteration in figure is capable of modifying the tint of the blood. Thus he considers that solutions of salt render a coagulum of blood of a bright red colour by exosmosing the corpuscles, and thus making them assume a biconcave form, and that when the corpuscles are endosmosed, and assume a convex form [as by washing the reddened coagulum in water] the colour of the blood is darkened in consequence; but Dr. Rees considers this statement to be incorrect, for saline matters will render a coagulum of a bright red colour, whether an endosmotic or an exosmotic action be induced; besides, blood-corpuscles may be changed in form, without any variation in the colour of the blood being produced in consequence. Moreover, strong saline solutions cause the corpuscles to become flaccid and empty, and not to assume that biconcave form which Mûlder considers so well calculated for the reflexion of light. Mûlder and others conceive that the iron in the hematosine has nothing to do with the colour of the blood, inasmuch as this metallic ingredient may be removed without the colour

being destroyed; Dr. Rees objects to this being received as a conclusive argument against the iron being essential to the formation of the red colour.\*

2. *Formation of the buffy coat.* Mr. Gulliver† has given the results of some experiments on the coagulation of the blood, which seem to add confirmation to the view entertained by Mr. Wharton Jones and others, that the formation of the buffy coat is due in great measure to an increased aggregation between the red corpuscles, by which these latter tend to arrange themselves in rolls, and consequently to subside to the bottom of the vessel more readily than they would do as individual corpuscles. With this tendency to rapid subsidence there is also usually combined a slowness in the coagulation of the liquor sanguinis, so that the corpuscles have time to leave the upper layers before coagulation commences. Mr. Hewson and Dr. Davy, however, maintain, that the rapid sinking of the corpuscles is due to an attenuation of the liquor sanguinis, but against this Mr. Gulliver argues, that if we admit the sinking of the red corpuscles to afford an accurate test of the consistency of the liquor sanguinis, we must also admit what seems improbable, that the liquor sanguinis becomes thinner some minutes after the blood has been withdrawn, for at that time the falling of the red corpuscles is most rapid. Following are some of Mr. Gulliver's conclusions:—

1st. There is a remarkable acceleration after a few minutes, in the rate of which the blood-corpuscles sink into the liquor sanguinis. 2d. This acceleration may be increased by increasing the aggregation of the corpuscles; and prevented or reversed by preventing or destroying the aggregation of the corpuscles. 3d. The sinking of the corpuscles is slower in blood thickened by weak saline solutions, than when mucilage is added with the salt. 4th. The sinking of the corpuscles may be slower in serum artificially made thicker and heavier. 5th. In the cruro of horse's blood, the corpuscles are more aggregate, and have a greater appearance of agglutination, than in very buffy human blood. 6th. There may be a buffy coat, or only a comparatively thin one, in the blood of the horse, when the blood has been made thinner, and its coagulation retarded. 7th. The corpuscles of the horse sink much more quickly in his serum than the corpuscles of man do in his. 8th. Increasing the proportion of corpuscles in the blood hastens coagulation, and prevents or diminishes the formation of the buffy coat, more than increasing the serum only.

3. *Corpuscles.* Mr. Hobson‡ has examined microscopically the blood-corpuscles of the ornithorhynchus, kangaroo, and phalanger. Those of the ornithorhynchus have the form of circular discs, like those of the most part of other mammalia, and their diameter differs but little from the diameter of the corpuscles of human blood, averaging about  $\frac{1}{3500}$  of an inch. In the kangaroo, the corpuscles are somewhat smaller, and in the phalanger they are about  $\frac{1}{3300}$  of an inch. The corpuscles of the eschidnè, which Mr. Hobson has also examined, resemble very closely those of the ornithorhynchus.

4. *Inflammation in cold-blooded animals.* M. Hereboullet§ gives the particulars of an examination made on an alligator which had died of *peritonitis* occurring as a consequence of perforation of the intestine. Within the peritoneum were found all the characters of true inflammation; intense redness, effusions of lymph, false membranes, agglutination of the intestines and purulent secretion, proving beyond doubt the possibility of inflammation taking place in cold-blooded animals.

### § 2.—Digestion.

5. *Vomiting.* Some observations on the subject of vomiting have been offered

\* For an accurate analysis of the ashes of blood by Enderlin, and for an abstract of Scherer's and Mûlder's recent investigations into the properties of the colouring matter of the red corpuscles, see Mr. Paget's Report in British and Foreign Medical Review, January 1845, p. 288.

† In a paper read to the London Medico-Chirurgical Society, an abstract of which is contained in the Medical Times, Feb. 22, 1846, p. 453.

‡ From Medical Times, Feb. 22, 1845.

§ Annales des Sciences Naturelles. Janvier 1845, p. 43.

¶ Gazette Méd. Fev. 1, 1835.

by Mr. Paget\* chiefly in reference to the agency of the diaphragm. The deep inspiration preceding the act of vomiting is terminated by the closure of the glottis; after this the diaphragm cannot move at all without expanding or compressing the air in the lungs, therefore it presents an unyielding surface against which the stomach may be pressed by the contracting abdominal muscles. Most probably, as observed by Mr. Anderson, the diaphragm remains during the act of vomiting in a state of rigid contraction, though were it even relaxed it would still present a resisting surface on account of the closure of the glottis. Another condition essential to vomiting is the relaxation of the oblique fibres of the stomach, which probably takes place exactly in the coincidence with the contraction of the abdominal muscles, just as the relaxation of the muscles closing the glottis occurs coincidentally with the contractions of the expiratory muscles in the acts of coughing, sneezing, &c.

6. *Intestinal villi. Lacteal absorption*.—It has long been a matter of difficulty to explain how chyle, or the nutritive portion of chyme, found its way into the lacteals. The fancied existence of mouths or openings at the extremities of the lacteal tubes, as described by Mr. Cruikshank and Dr. William Hunter (and generally admitted during the period in which they wrote,) as explanatory of the mode in which the lacteals and lymphatics in general performed their functions, seemed to remove this difficulty; but the researches of Krause, Valentin, and others, having disproved the existence of orifices in the lacteals, the mystery of absorption remained as great as before. Mr. Goodsir,† a few years ago, was one of the first to suggest that the process of lacteal absorption is effected through the medium of cells; and by recent observations, he has proved almost beyond question that cells are the real agents by which the selection and absorption of the nutritive portions of the chyme take place. When viewed in this light, the matter is greatly simplified, especially since it is almost certain that nearly all the changes which are constantly occurring in the whole organic kingdom, on the grandest as well as the simplest scale, are effected through the agency of those minute, yet all-important bodies—nucleated cells. These cells seem endowed with a peculiar independent vitality, by means of which, at the time that they grow themselves, they are absorbing into their interior, from the surrounding medium, materials which they can convert either into the elements of tissue, as of muscle, nerve, bone, &c., if nutrition be the function assigned to them; or into some peculiar fluid of secretion, as of milk, bile, saliva, &c. if secretion be their especial object. Thus, growing themselves, they produce the growth of others, and by feeding themselves, they draw off waste materials from the body, and render them subservient to further useful purposes in the economy, or eject them from the system as refuse, by the natural outlets. The following comprises the substance of Mr. Goodsir's paper on the intestinal villi.‡

1. Each time chyme passes along the intestines, the villi receive an increased supply of blood; they become turgid and erect, and the epithelium covering them is cast off, so that the chyme can come into actual contact with their exposed surface.
2. At the same time, the epithelia lining the follicles of Lieberkühn are also thrown off, and mix with the chyme contained in the intestines; they probably contain a secreted fluid, subservient to the process of chylicification.
3. Each villus, besides its one or two looped lacteals, and the minute network of blood-vessels lining its walls, contains, in its quiescent state, scattered amongst the terminal loops of the lacteals, numerous granular particles which are the germs or nuclei of absorbing vesicles; during the process of chyme absorption, these minute germs become gradually developed into vesicles, probably by deriving nutriment from the neighbouring blood-vessels. Whilst they increase in size, these vesicles, by virtue of their peculiar absorbing power, draw into their interior certain materials from the chyme surrounding the villi, which they probably elaborate; having attained their full size, they burst, and discharge their contents either directly into the

\* British and Foreign Medical Review. January, 1843, p. 274.

† Edinburgh Philosophical Journal, July, 1842.

‡ Anatomical and Pathological Observations, by John and H. D. S. Goodsir, 1845, p. 4.

lacteals, or, more probably, into the texture of the villus, whence they are taken up by the lacteals. The function of the lacteals thus seems to consist in removing the debris and contents of the dissolved chyle cells. 4. Each villus is permanently covered (as also are the follicles of Lieberkühn lined) by a fine, smooth, germinal membrane,\* containing in its substance germinal centres of an oval form, situated at pretty regular distances, the office of which is the production of fresh epithelium cells to cover again and protect the surface of the villus, after the absorption of chyme is ended. 5. This mode of absorption by the chyle cells renders the analogy very striking between intestinal villi and the spongioles of plants; the latter of which most probably absorb nutriment for the plant through the medium of their cells. The soil in this latter case holds a relation towards the spongioles somewhat similar to that of chyme towards the villi. 6. It is probable that in the villi, as also in the spongioles of plants, the absorbed alimentary matters undergo the first steps of the organizing or vitalizing process.

The only difficulty which presents itself in the above theory of Mr. Goodsir, regarding the mode of absorption by the cells of the intestinal villi, is to understand how these cells can absorb materials for their own growth from the neighbouring blood-vessels, at the same time that they are also absorbing materials for the formation of chyle from the matters contained in the intestines; but this difficulty vanishes when we remember the wonderful endowments of cells in general, the power of selection and disposal of materials which they possess, together with other properties, showing that they are gifted with a peculiar independent vitality, to enable them to discharge certain important functions, the kinds of which vary according to the organs or tissues in which the cells are placed; besides, it does not seem improbable that, in the case of the cells of the intestinal villi, their own growth may be effected by means of the materials which they absorb from the chyme for the formation of chyle, and thus may be independent of the blood-vessels; for it does not appear that they ever grow, except when chylication is going on.

The epithelial coat of the villi seems to be chiefly destined for the protection of their surface at those times when absorption is not going on, since it is in all cases cast off when the process of absorption commences; probably also, in common with the epithelium lining the follicles of Lieberkühn, it serves some further purpose in preparing the chyme for absorption. Proof that the epithelial coat is thrown off during the passage of chyme along the intestines, removes the difficulty which it was conceived the cells would experience in effecting their absorption through the layer intervening between them and the chyme. The thin germinal membrane would be no impediment to the process of absorption; on the contrary, it would rather be favourable to it. Mr. Fenwick, of North Shields, has performed numerous experiments, and worked out very elaborately the subject of lacteal and lymphatic absorption, though the results he has attained do not help much in clearing the mystery which still to a certain extent hangs over this department of physiology.†

7. *Structure of the Liver.* In alluding to Müller's recent paper on the structure of the liver, in which this physiologist maintains the lobular arrangement of the component parts of this organ, Mr. Paget‡ says, "The only point in which I think Müller is wrong, is in describing the partitions as formed of fibro-cellular tissue. If one be cut from the interior of the liver, it will be found covered on both sides with hepatic cells and granules, which adhere to it much more firmly than those in the interior of the lobule do to one another. When these are scraped off, there remains a very thin and tough membrane, in which there are only a few filaments of fibro-cellular tissue, and which appears to be composed of a very dense network or networks of vessels, with gland cells still adhering among them. The appearances presented in the pig's liver are such as to indicate that its lobules are by no means generally or uniformly traversed by plexuses of ducts; in

\* See account of Germinal Membranes and Germinal or Nutritive Centres, by Goodsir.

† The results of his investigations are contained in four consecutive numbers of the *Lancet*, commencing Jan. 11, 1845.

‡ *British and For. Med. Rev.*, Jan. 1845, p. 276.

their interior they appear to contain only large nucleated biliary cells, with various granules loosely arranged; the ducts appear only in the walls of the lobules."

8. *Functions of the Bile.* Following is Mr. Paget's analysis of the recent experiments by Schwann, relating to the functions of the bile. "The experiments lead to the distinct conclusion of the bile being indispensable to life. They consisted in removing a portion of the common bile duct, and establishing an external fistulous opening into the gall-bladder, so that the bile might be naturally secreted, but be discharged externally, and not permitted to enter the intestine. Their general result was, that of 18 dogs thus operated on, 10 died of the immediate consequences of the operation, and of the remaining 8, 2 recovered and 6 died. In the six which died, death was the result of nothing but the removal of the bile; after the third day, they daily lost weight, and had all the signs of inanition; e. g., emaciation, muscular debility, uncertain gait, falling of the hair. They lived from 7 to 64 days after the operation; and the inanition was the greater the longer they survived. Young dogs appeared to die rather sooner than old ones. Licking the bile as it flowed from the fistula, and swallowing it had no influence on the consequences of the operation. In the 2 dogs that recovered, the importance of the bile was equally well shown; for, on these being examined, it was found that the passage for the bile into the intestine had been restored; and the period of its restoration was distinctly marked by their weight (which had previously been regularly decreasing) being augmented and continuing to increase till it amounted to what it was before the operation; and also by the fistulous opening into the gall-bladder healing and the discharge of bile ceasing.\*

### § III.—Circulation.

9. *Venous pulse.* M. Martin Solon† has given the details of two cases in which he observed pulsation of the dorsal veins of the hands. The patients had both been repeatedly bled, and taken tartar-emetic, for an attack of pleuropneumonia. The veins were prominent, rounded, of a blueish-red colour, and presented a diastolic and systolic movement, easily appreciable by the eye, and synchronous with the pulse: it was evidently not communicated by any adjacent vessels. Upon pressing the fingers, the pulsations ceased; but when the wrists were pressed, they remained as before. When the brachial artery was pressed, the pulsations of the radial and ulnar arteries, and of the dorsal veins of the hand, all disappeared together. In both cases, the patients gradually recovered. In one the venous pulsation appeared on the fifteenth day and remained seven days, the cardiac impulse being strong: in the other, the heart's impulse was feeble, and the venous pulsation remained for a shorter time. M. Solon explained the phenomenon of venous pulsation in these cases, by supposing that the abnormal fluidity of the blood facilitated its passage through the capillaries, and thus enabled it to retain the impulse communicated by the heart. He alluded to similar cases by Dr. Graves and Dr. Ward.‡ Pathologically, he thought the phenomenon important, as indicating a state of fluidity of the blood, which would render further bleeding inadvisable. Physiologically, it was important, as proving that the entire circulation is under the influence of the heart. In a discussion which ensued after the reading of the memoir, M. Poiseuille agreed with M. Solon in considering the phenomenon as another proof of the influence of the heart over venous circulation, but could not attribute it to the greater fluidity of the blood, for the experiments of Magendie and himself had proved that the more aqueous the blood became, the greater was the difficulty with which it passed through the capillaries, owing to imbibition. He thought it, therefore, more correct to explain the influence which loss of blood evidently had in producing venous pulsa-

\* Brit. and For. Med. Rev., Jan. 1845, p. 276.

† In a memoir read before the Academy of Sciences, Paris. *Lancet*, January 4, 1845, and *Bulletin des Académies*, Novembre, 1844, p. 24.

‡ *London Medical Gazette*, 1832, p. 376. Dr. Ward accounted for the phenomenon of venous pulsation in the way above suggested by M. Solon.

tion, by considering the heart as having lost energy, whereby a smaller quantity of blood is thrown into the arteries, which being less dilated contract with less force, and thus lose their power of converting the intermittent fluid into a continuous one, as is normally the case.

10. *Moving powers of the blood.* Dr. Calvert Holland, in a recent work on the circulation,\* has raised objections to most of the now generally admitted truths respecting the agencies concerned in carrying on the circulation, as established by the experiments of Sir David Barry, Poiseuille, Magendie, and many others. Dr. Holland has displayed considerable ingenuity in enforcing his arguments, and in some particulars he is correct; but, on the whole, his objections are not sufficiently weighty to entitle their being received as valid. He has dealt so much at length with his arguments, that even an abstract of them cannot be given here.

11. *Agency of the pericardium in the circulation.* Mr. J. H. Walshe, of Worcester,† has offered an ingenious theory to explain how that imaginary difficulty, the return of venous blood to the heart, contrary to gravity, may be overcome. He considers the pericardium, by virtue of its structure and arrangement, to be the chief agent, (through the medium of the ventricles,) by which this object is effected. He compares the human pericardium to an unyielding tent or box, and considers it so firmly fixed at its several points of attachment, as to be capable of resisting considerable pressure from without, and of not yielding to the various movements of the inclosed heart. Assuming this arrangement to be true, and the cavities of the heart with their contained blood always to occupy a given space, which is maintained of the same dimensions by the pericardium, Mr. Walshe reasonably infers that, as the ventricular contraction forces out a certain amount of blood, an equivalent proportion must rush into the auricles, otherwise a space would exist within the unyielding pericardium, resulting from the contraction and emptying of the ventricles. In this way, he revives the old notion, which attributed to the ventricles a sucking as well as a propelling power. This ingenious theory will hardly be found reconcilable with facts. The human pericardium and its attachments are more yielding than Mr. Walshe admits; witness the large effusions occasionally contained within its cavity, the great displacement of the heart and pericardium induced by pleuritic effusions, emphysematous lungs, &c. Again, the pericardium must be somewhat yielding to allow of its parietal surface following the sternum upwards and forwards, and the diaphragm downwards, during inspiration; for the great vessels at the base, to which the pericardium is attached, form a fixed unyielding point. The existence of this amount of flaccidity renders it pretty certain that the pericardium and surrounding soft textures will readily fall in, and fill up the space left by either the ventricular or auricular contraction. To these, other arguments might be offered, as the existence of an adherent pericardium without consequent hypertrophy of the heart; one or two instances of a heart without a pericardium; but the above are sufficient to render doubtful this new attribute of the pericardium, the advantage of which, indeed, were it to exist, would be trifling, for the amount of force expended by the ventricles in suction would be of greater ultimate advantage if entirely directed to the onward current. The difficulties attending the return of venous blood to the heart are, moreover, greatly overrated.

Mr. Walshe assigns another useful purpose resulting from this assumed arrangement of the pericardium, that of entirely preventing regurgitation from the auricles, and thus dispensing with valves at the mouths of the large veins. This again is hardly tenable, for auricular regurgitation does to a certain extent take place, as shown in the experiments of Barry and Poiseuille, where, during the diastole, fluid rose in the tube inserted into the jugular vein: further regurgitation is prevented by the contraction of the muscular fibres which surround the mouths of the large veins opening into the auricles.

\* *Philosophy of the Moving Powers of the Blood.* London, 1844.

† *Provincial Medical and Surgical Journal*, Feb. 5, 1845.



§ IV.—*Respiration.*

12. *Physiology of asphyxia.* Mr. Erichsen, in a recent admirable essay,\* states that the cause of the stoppage of the circulation in asphyxia is threefold, depending:—1st. Upon the arrest of the respiratory movements; the influence of this agent is comparatively trifling.—2d. Upon the weakening of the heart's action; this has an important influence in arresting the circulation. The enfeebled condition of the heart results from the circulation through its muscular substance of blood deprived of its stimulating arterial qualities, and diminished in quantity. When a due supply of arterial blood is furnished to its muscular substance, the heart is enabled to propel even black blood through a lung entirely deprived of air; this, Mr. Erichsen proved by an experiment of tying the right bronchus of a dog, at the same time keeping up artificial respiration through the left lung; in nine minutes after the ligature of the bronchus, he tied one of the pulmonary veins of the same side, and then punctured it on the distal side of the ligature. Black blood flowed from the puncture, and continued to ooze for eight minutes, when the experiment was discontinued. During the whole time not a bubble of air gained admission into the right lung, (consequently, all chemical changes in it must have ceased,) yet black blood continued to circulate through it; during this time the heart was supplied with arterial blood from the left lung.—3d. Upon obstruction offered to the passage of venous blood through the lungs. This results not from paralysis of the minute pulmonary vessels, in consequence of their proper "nervous influence" being destroyed by the circulation of venous blood through the medulla oblongata, for Mr. Erichsen proved that the circulation ceases as quickly in an animal whose trachea is closed, when arterial blood from another animal is supplied to its brain and medulla oblongata, as when these parts are permeated by venous blood. Neither, again does this obstruction depend upon the mere arrest of chemical changes between the air and blood, for these changes cease in two minutes after closure of the trachea, whereas the circulation continues, and the femoral artery pulsates for six minutes longer. The cause of this obstruction in the pulmonary circulation, advocated by Mr. Erichsen, is the refusal of the minute pulmonary veins (not the capillaries) to receive venous blood, which stimulates them to contract upon their contents. This action is contrary to what the general sedative properties of venous blood would lead us to expect; but he explains it by reference to the examples of substances acting as *sedatives* to one surface and *stimulants* to another, although the surfaces may not present any appreciable difference in structure. In a similar manner, the minute systemic arteries contract upon and obstruct the flow of venous blood through them, thus offering a further obstacle to the already enfeebled heart.

These various impediments to the heart's action increasing, especially the circulation of venous blood through its muscular substance, its contractions cease, and with this cessation occurs the extinction of organic life, which usually takes place under ten minutes from the commencement of the asphyxiating cause; although perfect insensibility and loss of voluntary movement occur in about one and a half or two minutes, in consequence of the circulation of unoxxygenized, unstimulating blood through the brain; the medulla oblongata preserves its functions somewhat longer.

13. *Minute structure of the lungs.* The following abstract of a paper lately read by Mr. Rainey, before the Medico-Chirurgical Society, is taken from the *Medico-Chirurgical Review*.†

1st A bronchus, when traced from its commencement to its termination, is seen to be, in the first part of its course, more or less cartilaginous; it then becomes destitute of cartilage, retaining, however, a perfectly circular form, and

\* Edinburgh Medical and Surgical Journal, January 1845.

† April 1845, p. 330; also see notice of the same paper in the London Medical Gazette, April 4, 1845.

having no air-cells opening into it; farther on, being still circular, numerous air-cells open into it; lastly, the air-cells increase so much in number, and open into the bronchus so closely to one another, that the tube can no longer retain its circular form, but becomes reduced to an irregular passage, running between the cells, and ultimately reaching the surface of the lobule, ends by forming a terminal air cell.

2d. The air-cells are small irregularly-shaped cavities, having generally four or five unequal sides; those which are situated close to the small bronchial passages open into them by well-defined circular apertures, whilst those which are situated at a distance from these passages open one into the other—an arrangement which those who are acquainted with the disposition of the air-cells in the injected lung of the frog and serpent will readily comprehend; in fact, each lobule of the lung of the mammal and man, with its bronchial passages and appended cells, may in some sort be regarded as a repetition of the whole lung of the frog.

3d. The border of each air-cell is surrounded, in addition to the epithelium, by a number of fibres definitely arranged in a circular manner, so as to form a circumscribed limit to each cell. The fibres appear to be elastic, and have no resemblance whatever to muscular fibres, striped or unstriped.

4th. The sides or walls of the air-cells consist of a dense plexus of capillaries, situated in the interior of the lobules, between two layers of the pulmonary membrane: but, on their exterior, between this membrane and the pleura, in the case of the lobules on the outer surface of the lung, or between it and the interlobular areolar tissue in those lobules which bound the interlobular spaces. There is thus, between every two cells, only one vascular network, so that the small stream of blood in each capillary vessel is acted on by the air upon both sides; whilst, in the frog, serpent, &c., there being two plexuses of vessels between two cells, the blood in the capillaries is only aerated on one side.

5th. The number of capillary plexuses is not the same as that of the air-cells, one network passing between and supplying several cells; or, in other words, one terminal branch of the pulmonary artery supplies the plexuses of several air-cells.

6th. The fetal lungs, prior to the act of respiration, when well injected, are distinctly seen to possess air-cells, fully formed and surrounded, as in the animal which has respired, by plexuses of blood-vessels.

M. Rochoux's\* account, so far as it goes, corresponds with the above accurate description given by Mr. Rainey. According to M. Rochoux's calculation, the number of pulmonary cells amounts to about 600,000,000, and there are about 17,790 grouped around each terminal bronchus.

#### § V.—Structure and Formation of Tissues.

14. *Structure of lymphatic glands.* Some information concerning the internal structure of lymphatic and lacteal glands has been afforded by Mr. Goodsir.† The interior of each lymphatic and lacteal gland is made up of anastomosing ramifications of the afferent and efferent lymphatic vessels—these anastomosing branches are arranged very closely together, their external surfaces being separated from each other by a very fine capillary network formed by the blood-vessels of the gland. The extra glandular lymphatics as they enter the gland lose their external filamentous coat, which becomes continuous with the capsule of the gland—their middle fibrous coat also disappears shortly after the vessels have entered the gland. The internal coat is therefore the only remaining texture of the intra-glandular lymphatics; this coat becomes greatly thickened and opaque. It consists of a fine transparent external membrane, containing ovoidal nucleated cells (germinal spots) placed at regular distances along it. Within this external membrane and almost filling up the canal of the lymphatic vessel, is a thick

\* For a notice of which see *Gazette Médicale*, Janvier 4, 1845, p. 14.

† L. c. p. 44.

layer of nucleated epithelial particles; this layer is thickest in the lymphatics towards the centre of the gland, and gradually diminishes towards the circumference, where it becomes continuous with the layer of flat epithelium scales of the extra-glandular lymphatics. The epithelial particles are on an average about  $\frac{1}{100}$  of an inch in diameter. They are probably being constantly (though with periodically increased activity as during the passage of lymph or chyle) developed from the germinal spots of the external membrane, and when formed they probably discharge some important function towards the lymph or chyle contained in the canal, and with which they are always in contact.

15. *Secreting structures.* The following comprises an abstract of the chief points contained in an excellent paper by Mr. Goodsir;\* the subject relates to the function of secretion as well as to the structure of secreting organs, and is in many respects original.

1st. Secretion is essentially a function of nucleated cells. The cells endowed with this property of secretion possess a peculiar organic power by which they can draw into their interior certain kinds of materials varying according to the nature of the fluid they are destined to secrete. Some cells have merely to separate certain ingredients from the surrounding medium, others have to elaborate within themselves matters which do not exist as such in the nutritive medium.

2d. Though secreting cells thus differ in the nature of the fluid which they secrete, (as whether milk, bile, saliva, or other,) their structure seems to be nearly the same in all cases; each consisting, like other primitive cells, of a nucleus, cell-wall, and cavity.

3d. The nucleus seems to be both the reproductive organ by which new cells are generated, and the agent for separating and preparing the secreted material. The cell-cavity seems destined chiefly to contain the secreted fluid until ready to be discharged, at which time, the cell then matured, bursts and discharges its contents into the intercellular space in which it is situated, or upon a free surface, as the case may be.

4th. The mode of secretion in glands of which the testicle of the *squalus cornubicus* may be taken as a type, seems to be the following.† Around the extremities of the minute ducts of the glands are developed acini or primary nucleated cells, each of which as it increases in size has generated within it secondary cells, the product of its nucleus. The cavity of the parent cell does not communicate with the duct on which it is situated until its contents are fully matured, at which time the cell-wall bursts or dissolves away, and its contents are discharged into the duct. From this constant succession of growth and solution of cells, it results that the whole parenchyma of a gland is continually passing through stages of development, maturity, and atrophy, the rapidity of which process is in proportion to the activity of the secretion. There seems, therefore, to be no essential difference between the process of secretion and the growth of a gland, the same cells are the agents by which both purposes are effected; the parenchyma of glands is chiefly made up of a mass of cells in all stages of development; as these cells individually increase in size and so constitute their own growth as well as that of the common glandular mass, they are at the same time elaborating within themselves the material of secretion, which, when matured, they discharge, by themselves dissolving away. There are a number of germinal spots or centres in a gland from which acini or primary cells are developed.‡

5th. The true fluid of secretion is not the product of the parent-cell of the acinus, but of its included mass of secondary cells, which themselves become primary secreting cells, and form the material of secretion in their cavities. In some cases these secondary cells pass out entire from the parent-cell, constituting

\* L. c. page 20, et. seq.

† Conglomerate glands; in general, as the salivary glands, pancreas, &c., may be included in this class, though individual differences as to the arrangement, and other peculiarities of the cells, occur in each.

‡ Vide account of germinal spots, or nutritive centres, page 263.

a form of secretion in which the cells possess the power of becoming more fully developed after being discharged and cast into the duct, or cavity of the gland.

6th. In the order of glands, which consist of follicles more or less elongated, the following is the arrangement :—At the blind extremity of each follicle is situated a germinal spot at the centre of which is constantly or periodically developing nucleated cells. These cells, as they become developed, tend towards the open extremity of the follicle. At first they are simple nucleated cells, but as they advance they gradually assume the characters of primary secretory cells, and contain secondary cells in their interior. When fully matured and arrived at the attached extremity of the follicle, the primary cells burst and allow their contents to pass into the branch of the duct to which the follicle is attached. Each follicle is virtually permanent, though both its contained cells and its walls are continually undergoing change, receiving development and addition at the blind extremity, being absorbed and disappearing at the other.

7th. Mr. Goodsir considers that the process of original development of glands in the embryo is identical in its nature with the growth of a gland during its state of functional activity. The blastema which announces the approaching formation of a gland in the embryo, in some instances precede, and is in other instances contemporaneous with, the conical blind protrusion of the membrane upon the surface of which the future gland is to pour its secretion. In certain instances it has been observed that the smaller branches of the ducts are not formed by continued protrusion of the original blind sac, but are hollowed out, independently, in the substance of the blastema, and subsequently communicate with the ducts. It appears highly probable, therefore, that a gland is originally a mass of nucleated cells, the progeny of one or more parent-cells, and that whether the membrane in connexion with the embryo of the gland sends a conical protrusion into the mass or not, the extremities of the ducts are formed as closed vesicles, and then nucleated cells are formed within them, and are the parents of the epithelium cells of the perfect organ.

16. *Structure of serous membranes.* Mr. John Goodsir† offers the following observations on the structure of serous membranes. A portion of the human pleura, or peritoneum, consists, from its free surface inwards, of a single layer of nucleated scales; of a germinal membrane, (vide account of, by Mr. Goodsir;) and of the sub-serous areolar texture intermixed with occasional elastic fibres. The blood-vessels of the serous membrane ramify in the areolar texture. The germinal membrane seldom shows the lines of junction of its component flattened cells. These appear elongated in the form of ribands, their nuclei, or the germinal spots of the membrane, being elongated, expanded at one extremity, pointed at the other, and somewhat bent upon themselves; they are bright and crystalline, and may or may not contain smaller cells in the interior. If these germinal centres be the sources of all the scales of the superficial layer, each centre being the source of the scales of its own compartment, then the matter necessary for the formation of these during their development must pass from the capillary vessels to each of the centres, acted on by forces whose centres of action are the germinal spots; each of the scales, after being detached from its parent centre, deriving its nourishment by its own inherent powers.

17. *Structure of bone.* Mr. Goodsir‡ describes the soft portion of bone to be situated within the bone-corpuscles, and to consist in each corpuscle of a little mass of nucleated cells of great transparency; the soft portion, therefore, is not continuous like the hard, but is divided into as many portions as there are corpuscles.

2. The hard portion of bone is made up of cells filled with bony substance, and ossified or calcified primordial cells, which cells as they grow old are constantly dissolving, and their debris falling back into the returning circulation,

\* Under this class may be included the follicular glands of the mucous membrane of the stomach, &c.

† L. c. page 41.

‡ L. c. page 61, et seq.

whilst new ones are being formed from the mass of nucleated cells (which are so many centres of nutrition) within the bone-corpuscles. Each of these centres of nutrition is constantly absorbing nutritive materials from the blood-vessels through the medium of the calcigerous canals, and appropriating them partly for the nourishment of the existing calcigerous cells, but more especially for the formation of new ones, which it supplies to all parts within its own territory, or within the range of its own system of calcigerous canals.

3d. The hard and soft parts of bone, which when combined constitute the true osseous texture, only differ from each other in this, that the cells of the one are ossified, those of the other retain their original delicacy and softness.

4th. In every true bone there exists, between the blood-vessels and the walls of the Haversian canals, a layer of cellular substance, the cells of which Mr. Goodsir considers to be the descendants of the corpuscles of the cartilage or matrix in which the bone was originally formed; for in the original development of the bone around each cartilage-corpuscle, are formed a number of secondary corpuscles which arrange themselves in a linear series, the rows of which assume a direction perpendicular to the ossifying surface. These secondary cells remain as centres of nutrition for the future bone, whilst the progeny formed from each constitutes a cellular mass; around each such cellular mass, the capsules, or laminæ, of compact primary bone become formed, and when these capsules have opened into each other, they form Haversian canals, the blood-vessels within which are separated from the walls of the canals by the layer of cellular substance. The great extent of, and the prominent position held by this cellular substance in the development of bone, proves that it must play some important part in bone economy. In adult bones this cellular substance is, in the medullary cavity, cancelli, and to a certain extent, in the larger Haversian canals, replaced by fat-cells.\*

*Relative properties of animal and earthy matters in bone.* Dr. Stark has made some very numerous analyses of bones, chiefly with the view of determining the proportional amounts of earthy and animal matters in the bones of the different classes of vertebrate animals. He has examined human bones, and those of an extensive number of mammalia, birds, reptiles, and fishes, and has given a comprehensive table showing the results.† The most interesting conclusions to be derived from these experiments, are:—1st. The proportion of earthy and animal matters in the bones varies but little over the whole animal kingdom; wherever a true bone occurs, that bone contains nearly the same average amount of earthy and animal matters; therefore, the statement that the higher we ascend in the scale of organization, the larger amount of earthy matters do the bones contain, is fallacious. 2d. The animal matter composes about one third of the weight of the dry clean bone: thus the mean proportion in the bones of all vertebrate animals 66·09 per cent. of earthy, 33·91 of animal matter; the mean proportion in the bones of man is 66·61 earthy, 33·39 animal matter. The proportion of earthy matters in the bones of wild mammalia seems to be a fraction higher than in domesticated animals. 3d. Age does not seem to increase the amount of earthy matters in the bones, as is generally supposed. 4th. The hardness of bone does not depend on the amount of earthy matter contained in it, as is shown in the readiness with which the bones of fish may be cut, although they contain as large an amount of earthy matter as the ivory-like leg bones of the deer or sheep. 5th. Neither increased flexibility, nor transparency of bones (as in the bones of fish) depends on a diminished proportion of earthy solids in its texture; but like that of increased hardness, probably on the peculiar structural arrangement of the tissue. The great fault in the analysis of bones hitherto published is, that the amount of animal matter has been rated too high, probably from want of care in drying the bones and properly freeing them from fat or oil previous to burning. Dr. Stark alludes to the excessive fragility of human bones as contrasted with

\* For a further account of the development of bone, see an analysis of Bidder's Researches in Mr. Paget's Report, p. 538 of Brit. and For. Med. Rev. April, 1845.

† Edinburgh Medical and Surgical Journal, April 1845, p. 818.

those of animals, so that when prepared for chemical examination and deprived of their membranes and fat, they may be readily crushed by firm pressure between the finger and thumb; whereas, the bones of the lower animals similarly prepared, will bear the roughest handling without injury. He suggests that this circumstance might account for the fact of human bones never being met with in those tertiary deposits in which the bones of lower animals are so abundant.

18. *Vessels in fat, smaller than capillaries.* Mr. Smee\* describes a new set of minute vessels existing as appendages to fully developed fat, and to which he gives the name of "*Vasa adipis*." These minute vessels measure from about  $\frac{1}{1000}$  to  $\frac{1}{500}$  of an inch in diameter; they are given off from the capillaries and are distributed at every angle of each fat-cell. They exist only in fat, the globules of which have assumed their polygonal form. Although the term vessel is applied to these structures, yet Mr. Smee states that no evidence whatever can be adduced either of the existence in them of a cavity or of distinct walls, beyond their being permeable by fluid injections, [which in ordinary cases would indicate the existence of a cavity.] Mr. Smee suggests nothing as to their function, but states that they must not be considered as *vasa serosa* which system of vessels are, in all probability, quite imaginary. [The existence of these *vasa adipis* requires further confirmation.]

19. *Centres of nutrition.* Mr. Goodsir† has recently made several important additions to the doctrine of cell-formation. Amongst other observations he states that, besides all organs and tissues having their origin in and consisting essentially of simple or developed cells possessed of a peculiar independent vitality, these component cells are moreover divided into numerous departments, each of which consists of several cells arranged round one central or capital cell, which latter is the source whence all the other cells in its own department have derived their origin. To each of these several central nucleated cells, he applies the name of *nutritive centre*, or *germinal spot*. Each nutritive centre possesses the power of absorbing materials of nourishment from the surrounding vessels, and of generating, by means of its nucleus, successive broods of young cells, which from time to time fill the cavity of the parent cell, and carrying with them its cell-wall, pass off in certain directions and under various forms, according to the texture or organ of which their parent forms a part. There are two kinds of nutritive centres, those which are peculiar to the textures, and those which belong to the organs. The former are in general permanent, the latter are mostly peculiar to the embryonic state, and ultimately disappear. There is one form in which the nutritive centres are arranged both in healthy and morbid parts, which constitutes what Mr. Goodsir calls a *germinal membrane*; it is only met with on the free surface of organs or parts: it is a fine transparent membrane, and consists of cells arranged at equal and variable distances within it; the cavities of these component cells are flattened, so that their walls form the membrane by cohering at their edges, and their nuclei remain in its substance as the *germinal centres*. One surface of the membrane is attached to the surface of the organ or part, and is therefore applied upon a more or less richly vascular tissue; the other surface is free, and it is on it only that the developed or secondary cells of its germinal spot are attached. These secondary cells, whilst forming, are contained between the two layers of the germinal membrane, but, as they become fully developed, they carry forward the anterior layer and become attached to the free surface, whilst the nuclei are left in the substance of the posterior layer, in close contact with the blood-vessels from which they derive the materials for the formation of new cells.

## § VI.—Nervous System.

20. *Functions of the cerebrum and cerebellum.* Dr. Cowan‡ has related two cases of encephaloid carcinoma of the brain, the details of which offer some points.

\* London Medical Gazette, April.

† L. c. page 1.

‡ Provincial Medical and Surgical Journal, April 16th, 1846.

of considerable physiological interest. One case is peculiarly instructive, as showing the great amount of cerebral lesion which may exist without being accompanied with any disturbance of the intellectual faculties, and with but slight interruption to the functions of the nervous system generally. The case was chiefly characterized during life by the occurrence of paroxysms of severe pain in the head, which was at first limited to the left side, but eventually became general. These paroxysms were accompanied by severe pain in the right arm and right leg, during the continuance of which the right arm was relaxed and motionless, but regained its power when the pain subsided; this was the only appearance of paralysis noticed; as far as could be ascertained, the sensibility of the arm was not diminished, and the right leg did not participate in the temporary paralysis of motion. There was occasional disturbance of vision in the right eye; and tinnitus of the right ear was a constant symptom; it consisted of a whizzing pulsating noise. There was no appreciable mental disturbance, and the patient walked down stairs the day on which she died. On examining the brain, the greater portion of the medullary substance of the right hemisphere, as also a large portion of that of the left hemisphere, was found converted into a red pulpy mass, presenting all the characters of ordinary encephaloid carcinoma. The gray portion was perfectly healthy to all appearance, which seems to support the favoured doctrine that it is the seat of the intellectual powers. Dr. Cowan suggests that the constant tinnitus may be explained by considering it to have been dependent on the pulsation of the diseased and softened middle lobe resting on the temporal bone, combined also with the morbidly increased sensibility of the parts.

The second case is still more interesting and instructive. It seems to prove very strikingly the truth of the now generally admitted opinion, that the chief function of the cerebellum is to produce a combined and harmonious action of the several muscles called into movement for the attainment of a given end, as in locomotion, &c. It also, as well as the last, illustrates the apparent dependence of the intellectual faculties on a healthy condition of the gray cerebral matter. On examining the brain in this case, there was found a mass, presenting the characters of encephaloid carcinoma, incorporated with the anterior extremity of the left lobe of the cerebellum, of which it seemed a prolongation; passing forward in inseparable connexion with the pons, and following the emerging fibres of the corresponding *crus cerebri*, it terminated about an inch further (without penetrating the ventricle), in the medullary substance of the middle lobe of the left hemisphere; the principal seat of the morbid change was in the commissural fibres which contribute to the formation of the pons. The medullary substance was alone diseased, the gray matter being distinct, and to all appearance healthy. The several nerves passing through the diseased mass were more or less vascular and soft, which would account for the various disturbances in function presented during life by the parts to which they were distributed, as deafness, &c.

The chief points in the symptoms of this case to which attention need be directed in this notice are, that there was no paralysis of motion or sensation to the last, no convulsive movements, neither was one side of the body more distinctly implicated than the other, but the controlling, the coordinating power of the muscular system appeared abolished or nearly so; thus, in the early part of the affection, the patient staggered during walking, as if slightly intoxicated, and was unable to direct her progress in a straight line, she constantly deviating to the left; as the disease advanced, the irregularity in the voluntary movements increased, and gradually affected the arms as well as the legs. She required to be held and directed in every act, supported at times by two assistants, and pushed forwards by a third to enable her to move about the room; and if by accident she fell when attempting any effort alone, she was quite unable to rise or to assist herself. She was perfectly sensible throughout, and the only change in her mental condition was a kind of restless excitement, with a certain indescribable feeling of distress, a childishness of thought with great feebleness of memory and attention: often intervals of unexpected and remarkable revival of

natural feelings and mental powers would occur, the cause of which is quite inexplicable.

A curious case is related by M. Blaqui re,\* in which a ball discharged from a pistol struck a child, aged four years and a half, on one temple, traversed the brain, and passed out at the other temple; the child survived until the 29th day after the accident. When seen by M. Blaqui re upon the 20th and several subsequent days, he was found sitting up in bed, amusing himself with his playthings, and eagerly calling for more food than was allowed him; he was lively and cheerful, except during the dressing of the wounds, manifesting the possession of all his mental faculties. After death it was found that the cranium had been perforated about an inch and a half above the external orbital process on each side; the anterior part of both cerebral hemispheres had been traversed by the ball; in front of the canal occasioned by its passage, there was a layer of cerebral substance six or eight lines in thickness, the gray matter above the canal was untouched, the ventricles of the brain were also uninjured.

21. *Reflex function of the brain.* In a paper read before the last meeting of the British Association at York,† Dr. Laycock offered further evidence confirmatory of his opinion published four years ago, that the brain, although the organ of consciousness, was subject also to the laws of reflex action, and that in this respect it did not differ from the other ganglia of the nervous system. He was led to this opinion by the general principle that the ganglia within the cranium being a continuation of the spinal cord must necessarily be regulated as to their reaction or external agencies by laws identical with those governing the functions of the spinal ganglia, and their analogies in the lower animals; and on investigation he found that observations and arguments like those satisfactorily adduced in proof of the existence of the reflex function of the spinal ganglia, might be brought forward in proof that the cerebral ganglia have similar endowments.

He considers that the cerebral nerves, but especially the optic, auditory, and olfactory, are incident excitator nerves; that impressions made on them will pass on to the central axis, thence be communicated to the motor nerves, and thus give rise to combined muscular acts, or irregular and spasmodic movements. Similar acts may also have a centric origin, the exciting cause being *within* the brain. These acts may likewise be shown to be instinctive. In these particulars there is an evident analogy with the reflex functions of the spinal cord. To prove this, we must apply the natural stimulus to these nerves; thus light must impinge on the optic nerve, sound on the auditory nerve; pricking or tearing will have no effect in proving their reflex influence. Dr. Laycock mentions hydrophobia as presenting a good illustration of these cerebral reflex movements. The acknowledged excito-motory phenomena of hydrophobia may be induced, 1st, Through the sensual nerves of touch, as by the contact of water with the surface of the head, hands, chest, the lips and pharynx. 2d, By a current of air impinging on the face or chest. These causes act undoubtedly on the incident nerves of the cord, as mentioned by Dr. Marshall Hall. But 3d, A bright surface, as a mirror; 4th, The sight of water; 5th, The sound of water dropping; 6th, The idea of water, as when suggested to the patient that he shall drink;—all most indubitably induce excito-motor phenomena, as decided and distinct as the first and second causes.

Some of the spasmodic movements as well as being involuntary, have a conservative object in view, as shown in the attempts to remove water when presented, the expelling it from the lips with a violent spasmodic jerk, &c.

These are the chief physiological points contained in Dr. Laycock's admirable paper; the remaining part of it is somewhat too abstruse and metaphysical to admit of further notice here, but the whole is well worthy of attentive perusal.

22. *Animal electricity.* The highly interesting electro-physiological researches

\* See London Medical Gazette, May 2, 1845.

† British and Foreign Medical Review, January 1845, p. 298, et. seq.



of Professor Matteucci of Pisa have recently excited considerable attention; the following are the chief facts established by his experiments:—\*1st, Muscle is a better conductor of electricity than nerve, and nerve conducts better than brain; the conducting power of muscle may be taken as four times greater than that of brain or nerve.

2d. In the muscles of living animals, as well as of those recently killed, an electric current exists, which is directed from the interior of each muscle to its surface. The duration of this muscular current corresponds with that of contractility: in cold-blooded animals, therefore, it is greatest; in mammalia and birds it is very brief. Temperature has a considerable influence on the intensity of the current, a small amount of electricity, being developed in a cold medium, a larger one when the medium is moderately warm. Any circumstance which enfeeble the frogs (the animals experimented on) and derange their general nutrition, will diminish the power of the muscles to generate electricity, as they also impair the contractile force. The muscular current appears to be quite independent of the nervous system. It is uninfluenced by narcotic poisons in moderate doses, but is destroyed by large doses, such as kill the animal. The development of this muscular current seems evidently to depend on the chemical action constantly taking place as an effect of the changes accompanying nutrition; these organic changes, in short, give rise to an electric current, just as do the chemical changes attending the mutual reaction of inorganic materials, such as the reaction between a plate of metal, and an acidulated fluid in the ordinary voltaic pile. That considerable chemical changes attend the process of nutrition in muscle, seems evident when we consider the constant supply and waste of material of which it is the seat, and the evolution of sensible heat which accompanies its contraction; in this way the generation of electricity can be readily accounted for; the muscular fibre represents the metal acted on in the arrangement of the voltaic apparatus, and the arterial blood corresponds to the acidulated fluid. The surface of the muscle, which is more or less tendinous, and therefore different in structure and in function from the interior, represents the second plate of metal used in the voltaic apparatus, which does not suffer chemical action, but which only serves to form the circuit. The direction of the muscular current, therefore, from the interior to the surface of the muscle is just such as might be expected, supposing it to be due to a chemical action taking place in the interior of the muscle.

3d. Another result obtained by M. Matteucci is the proof of the existence in frogs of an electric current distinct from the muscular current; it proceeds from the feet to head, and is peculiar to the Batrachian reptiles.†

4th. Some curious results were obtained by applying electricity in various ways upon nerves. Upon making some experiments on the sciatic nerves of rabbits, he found that upon *closing* the circuit of the *direct* electric current, or the current directed from the brain to the nerves, contractions in the muscles of the posterior limbs were produced whilst upon *opening* this circuit marked signs of pain, with contraction of the muscles of the back, and feeble contractions of the posterior limbs, were caused. Upon *closing* the circuit of the *inverse* current, or that directed from the nerves to the brain, signs of pain, contractions of the muscles of the back, and feeble ones of the posterior limbs, were produced; upon *opening* it, contractions of the posterior limbs were caused.

It will not be misplaced to notice here the marked analogy between the actions of the electrical organ of the torpedo and those of muscular fibre, which Matteucci's interesting experiments illustrate. Both are organized to act in a particular way; the one to develop electricity without any visible change in itself; the other to contract, with a demonstrable evolution of both heat and electricity. Both will manifest their peculiar phenomena by direct irritation, or by indirect

\* Todd and Bowman's *Physiological Anatomy and Physiology of Man*, Part II. Also see a good review of Matteucci's *Traité des Phénomènes Electro-Physiol. des Animaux*, in *Mémoires de Chir. Rev.* April 1845.

† For an account of the experiments proving the existence and direction of this and the muscular current, see Todd and Bowman's *Physiological Anatomy*, vol 1, page 880.

irritation through the nerves. Both are brought under the control of the will by the nerves; the section of which paralyses the influence of the will over both, but does not destroy the peculiar power of either. In the electrical fish, irritation of the electrical lobe of the brain is capable of exciting a discharge of the organ, just as irritation of a segment of the spinal cord causes contraction of the muscles supplied by it. A current of electricity transmitted through the electrical organ or its nerves, causes discharge; and a similar current sent through a muscle of its nerves, causes it to contract. All the circumstances which modify the nutrition of muscle, will similarly affect that of the electrical organ.\*

23. *Nerves of the eighth pair.* Numerous observations have been lately made as to the respective functions of the glossopharyngeal, pneumogastric, and accessory nerves, by Stilling, Van Kempen, Bernard,† and Hein. Their conclusions, on the whole, agree pretty closely, though they differ on some points, both with each other, and with previous experimenters. The present state of our knowledge (incomplete though it is) regarding the probable functions of these nerves, deducible from recent and previous facts, is thus stated by Mr. Paget.‡

1st. The glossopharyngeal is chiefly the nerve of the sense of taste, and in a less degree, a nerve of common sensation.

2d. The glossopharyngeal is, according to the experiments of Müller and Hein, the motor nerve of the stylopharyngeus, and probably also of the palatoglossus. Its branches to the digastricus, stylohyoideus, and constrictors of the pharynx, appear to be sensitive ones, or else derived from the facial and accessory nerves, with which it has previously united.

3d. The pneumogastric is, from its origin, composed of both sensitive and motor fibres. But it is undecided whether it alone supplies any particular muscles, or whether, in all its muscular branches, and especially in those given off above the oesophageal, there are filaments from the accessory as well as from its own roots.

4th. The accessory nerve contains, in all its lower roots, motor fibres alone; in its upper roots, it is not improbable that there are some sensitive fibres also. It is a motor nerve of the sterno-mastoid and trapezius muscles; and very probably it gives, by its internal branch and other communications, motor fibres to the pneumogastric, from which they are subsequently distributed to some or all of the muscles of the larynx and pharynx; and, in some animals, to the muscles of the palate.

The main difficulty in assigning exactly to the pneumogastric and spinal accessory nerves their respective functions, depends on the intimate commingling of the fibres forming the uppermost roots of the accessory with those forming the lowest roots of the pneumogastric; so that it is hard to say whether some fibres belong to the one nerve or to the other: therefore, as Mr. Paget observes, before we can hope to distinguish precisely the physiological properties of these two nerves, we must learn to distinguish them (if, indeed, they are two nerves) anatomically.

24. *Anterior thoracic nerve.* Dr. Hargrave§ considers that the anterior thoracic nerve from the brachial plexus, inasmuch as it supplies the subclavius, pectoralis major and minor muscles, which muscles, he says, are especially concerned in dyspnea and orthopnea, ought to be added to the respiratory system of nerves, as laid down by Sir C. Bell. This nerve, he states, performs a function analogous to that performed by the external inferior respiratory nerve in respiration, namely, to associate in this movement, the muscles to which it is distributed, with the serratus magnus, the diaphragm, sternomastoid, and trapezius muscles. Dr. Hargrave, therefore, proposes to call this nerve the *anterior, inferior, external respiratory*, in reference to the aspect of the thorax to which it is distributed.

\* Todd and Bowman, l. c. p. 336.

† An analysis of M. C. Bernard's recent Memoir is given in the *Edinburgh Medical and Surgical Journal*, Jan. 1845, p. 234.

‡ *British and Foreign Medical Review*, April 1845, p. 663.

§ *Dublin Medical Press*, April 16, 1845.

25. *Pacinian corpuscles.* The following account of these little bodies is given by Mr. Paget. "The investigations of Henle and Kölliker have proved a new and peculiar mode of peripheral termination of the nerve fibres in the little bodies, seated especially in the nerves of the fingers and toes, which were discovered, and to a certain point well described, by Pacini, of Padua, in 1830. These *Pacinian corpuscles* are found in man at all ages after the twenty-second week of foetal life, and under all circumstances, and in many mammalia. They are most numerous on the cutaneous nerves of the hands and feet; but they occur also, sometimes, on other sensitive cerebro-spinal nerves, and on the sympathetic plexuses in the mesentery and mesocolon, and about the pancreas, where they are especially numerous in cats. In man, from 150 to 350 may be counted on a single limb; and they are chiefly abundant on the branches of the digital nerves, just penetrating the cutis, to which they are attached singly or in pairs, or sometimes in groups, by little fibro-cellular pedicles. Through the pedicle of each, a single primitive nerve-fibril passes into the corpuscle. The corpuscles are of various forms, elliptic, ovate, obovate, crescentic, or reniform; they measure (in parts of a line) from  $\cdot 66$  to  $1\cdot 2$  in length, and from  $\cdot 45$  to  $\cdot 6$  in breadth. They are semi-transparent, slightly glistening, and appear as if a central cord passed through them. Each of them is composed of from 40 to 60 very thin coats, arranged round a central canal or cavity, like so many capsules inclosed one within another; and each coat or capsule is composed of two layers of fibro-cellular tissue, an outer layer with circular, and an inner with longitudinal fibres. Between each two adjacent layers or capsules, there is an albuminous fluid; it is most abundant between the outer capsules, which are less compactly arranged than the central ones. The outermost of all the capsules in each corpuscle is connected by cellular tissue with the adjacent parts, from which also blood-vessels penetrate inwards through more than half the layers. Here and there the adjacent capsules appear connected by partial septa extending across the spaces containing the fluid, and this is especially the case at the end opposite the pedicle. The canal or cavity in the axis of each corpuscle contains a fluid like that between the capsules, and, in this fluid, a primitive nerve-fibril. The nerve-fibril, after traversing the pedicle of the corpuscle, and a conical prolongation from the end of the pedicle through the substance of the lower part of the corpuscle, enters the cavity, and at once becomes smaller, paler, and flatter. It passes along the cavity, and at or near its distal end, terminates in a knob, or by bifurcating; in no case is anything formed like the *terminal loops* of nerves, and it is very rarely that more than one nervous fibril enters a corpuscle; neither does the terminal enlargement of the nerve-fibril resemble a ganglion-corpuscle. Of the use of these bodies little can be said. It is suggested, that as their construction with alternate layers of membrane and fluid is rather like that of the electric organs of the electric ray, &c., these also may be electric organs, and, according to Pacini, the chief agents in mesmeric operations. But Henle and Kölliker could find no manifestations of free electricity in them during life. Their not occurring upon any known motor nerves, would appear to prove that they have nothing to do with motion; but their existence on many nerves of the sympathetic system, and their non-existence on many sensitive nerves, make it probable that they are not connected with acuteness of sensation. They may be electric organs, as their peculiar form suggests, but before they can be concluded to have any relation to animal magnetism, it would be advisable to prove that *that* has any relation (except in name) to physical magnetism, or any form of electricity."\*

26. *Sympathetic system: use of the sympathetic nerve and its ganglia.* With regard to the function of the sympathetic system, Dr. Procter † says: "The nearest approach to a positive determination of its use that we can come to with our present limited knowledge is, that it is for the purpose of regulating the tonic contraction of the arterial system, and for *nothing else*." He states the necessity of so important a system as the arterial, having a controlling and directing power,

\* Report on Anatomy and Physiology, British and Foreign Medical Review, April 1846, p. 574.

† Med. Chir. Rev. Jan. 1845, p. 153.

and observes, "that in all parts of the animal body where large and sudden supplies of blood are required at irregular periods—such as the heart, stomach, intestines, and organs of generation; there we have the ganglionic or sympathetic system very fully developed." He explains the reason why so few nerves of the sympathetic system are found accompanying the arteries of the extremities, by the fact that the parts to which these vessels are distributed do not require the same large, sudden, and irregular supplies of blood as do the several organs and viscera of the body—[and yet the condition of a limb in full action compared with its condition after a long rest, differs as much in regard to the quantity of blood circulating through it, as does that of an organ in full secretion compared with that of the same organ in a quiescent state, so that Dr. Procter's reason for the comparative absence of sympathetic fibres accompanying the arteries of the limbs, does not explain the circumstance sufficiently.]

27. *Splanchnic nerves.* M. Bourguery,\* in a late memoir considers that the splanchnic system of nerves consists of five parts. 1st. Of some visceral and organic nerves, the fundamental part of the splanchnic nervous system. 2d. Of ganglionic portions, which are considered as the general centres of excitement and of harmonization of that group of organs, and usually, as functional auxiliaries to each other. 3d. Of *extra-visceral* plexuses, or chains of communication between the different organs of the same group, between these and the various ganglionic centres, and between these various centres themselves. 4th. Of the two longitudinal chains of communication with the central extremity of the nerves, or properly the two cords parallel with the cerebro-spinal axis, known under the name of the great sympathetic. 5th. The last part of the splanchnic nervous system consists of anastomoses of the ganglionic nerves with the peripheral extremities of the cerebro-spinal nerves. M. Bourguery also mentions having observed in great abundance the nerves of synovial and serous membranes, and states also that he has observed ganglia and gray nervous matter on certain parts of the cerebro-spinal nerves, especially the trigemini and pneumogastric nerves, which offers some explanation for the similarity in function between these nerves and the great sympathetic observed by physiologists.

28. *Union of divided extremities of nerves.* The possibility of the divided extremities of two nerves of totally different functions being made to unite with each other has been again advanced by M. Taignot.† The conclusions he has arrived at coincide with the observations previously made by M. Flourens, though they are opposed to the results obtained by Dr. Bidder,‡ who experimented on the lingual and hypoglossal nerves, and was led to the conclusion that such an union does not take place. M. Taignot considered that since any nerve which has been divided may have its continuity and its functions completely restored by keeping its divided extremities in apposition for some time, so also it might be possible that the divided extremities of nerves of different functions might be induced to unite, and that the function of each nerve might thus be restored. From some experiments which he made on this subject he found:—1st. That if two adjoining nervous cords of different functions he included together in a single ligature so as to affect their simultaneous division, there is shortly developed between the four extremities a kind of nervous ganglion which is common to each of them, and in which the fibres of the two nerves and their functions seem confounded; and 2d. That if two adjoining nerves of different functions be divided, and the upper end of one be adapted to the lower end of the other and kept in apposition, the formation of a new nerve preserving the functions of the old one is effected. [The latter of these conclusions is so opposed to the results of Dr. Bidder's experiments, and so far from being in conformity with the laws by which the functions of the nervous system seem governed, that further observations are requisite before its probability can be admitted.]

29. *Re-establishment of sensibility in autoplasmic flaps.* Some curious observations have been offered by M. Jobert de Lamballe, which seem to show that the

\* Gazette Médicale, 12 Avril, 1845, p. 236.

† Ibid, 19 Janvier, 1845, p. 23.

‡ See Paget's Report, January 1844.

sensibility of flaps in autoplasmic operations is restored through the medium of blood-vessels, and not through that of demonstrable nerve-fibres. The following are his observations : \*—1st. Immediately after autoplasmic operations the sensibility of the flap diminishes or disappears ; this is in direct relation with the loss of blood. 2d. Until the section of the pedicle some degree of sensibility is retained. 3d. At the expiration of a certain period after this section, vascularity and sensibility re-appear in the flap simultaneously, and increase in an equal ratio. 4th. In many cases the vascularity of the flap becomes considerable, and its sensibility is then increased in a proportional degree. Anatomical investigation has furnished the following facts :—1st. The autoplasmic flaps after the section of the pedicle, are isolated from the rest of the system by a cicatricial tissue, 2d. There exist as means of communication between the flaps and the rest of the organization, only those vessels which traverse the tissue of the cicatrix ; nervous filaments are never seen in this new formation. 3d. The nerves which originally existed in the flap, waste and eventually disappear. 4th. The nerves of the part surrounding the flap stop at its borders ; sometimes they terminate abruptly in a kind of enlargement of the neurilema, at others they are lost in the tissue of the cicatrix, without its ever being possible to trace them into the flap.

30. *Functions of the nervous system.* Some curious views regarding the functions of the nervous system have recently been advanced by Natansen.† He considers that each nerve of sensation is composed of several kinds of nerves, each of which has its own peculiar function. Thus the nerves of touch would comprise those which perceive temperature, others which perceive the resistance of bodies, and lastly, others possessing the property of touch, properly so called. In proof, Natansen instances the fact, that either of these faculties may be temporarily lost without the other two being so ; thus, when the arm has been "asleep," and sensibility is returning in it, the hand first perceives temperature, then the resistance of bodies, and it is only after some time that the faculty of touch properly so called can be exercised ; in the lower extremities the contrary takes place, the sense of touch first returns, then we experience a sensation of pricking followed by the perception of temperature, whilst the faculty of appreciating the resistance of bodies returns last. With regard to the optic nerve, he admits three kinds of nerves : those of red, of blue, and of yellow light, which are the bases of all other colours. It is not alone the optic nerves which admit of being impressed by light—light may also act upon the nerves of the eyelids, not so as to produce the phenomena of vision, but so as to excite a sense of pricking ; in proof of this M. Natansen states, that he has often observed in blind individuals, even where the globe of the eye has been lost, that light has occasioned to them a painful sensation almost amounting to "photophobia." He analyses in the same manner the senses of taste, of touch, &c., and considers that they all confirm his statement, that all nerves of sensation are not simple, but are composed of several different kinds of nerves, to each of which belongs a peculiar function different to that of the others. He ventures also to explain the varieties of the intellectual faculties in the same way.

31. *Relative weight of the different portions of the brain.* M. Bourguery‡ finds that the mean weight of the encephalon, or central nervous mass being 20393·5 grains troy, the cerebral hemispheres stand for 16940·46 grains of that quantity, the cerebellum for 2176·7 grs., the cephalic prolongation of the cerebro-spinal axis for 1312·2 grs., of which the optic thalami and corpora striata take 879·9 grs. the medulla oblongata, with the pons varolii, 432·2 grs., and the spinal cord 710·1 grains. Hence, in man, the cerebral hemispheres include a nervous mass which is four times that of all the rest of the cerebro-spinal mass, nine times that of the cerebellum, thirteen times that of the cephalic stem of the spinal cord, and twenty-four times that of the spinal cord itself.

32. *Eye. Action of the oblique muscles.* Dr. George Johnson§ has performed some experiments to determine the action of the oblique muscles of the eye, and

\* London Medical Gazette, May 16, 1845, page 120.

† Gazette Médicale, Janvier, 4, 1845, p. 9

‡ Med. Gaz. Jan. 1845, p. 462. §Cyclopædia of Anatomy and Physiology—Art. Orbit. p. 791.

has obtained results similar to those arrived at by Volkman \* and others, proving the truth of Hunter's opinion, that these muscles rotate the eyeball on its antero-posterior axis,† and so keep the eye steadily fixed on an object we are regarding, during certain movements of the head, as from shoulder to shoulder, (the effects of which are not corrected by the recti muscles,) and thus enable the image of the object to be kept on the same point of the retina, and not be allowed to move over its surface, which it would do, during these movements of the head, were there no oblique muscles to counteract this tendency. In Dr. Johnson's experiments, a dog was killed by the injection of air into a vein, and immediately the inferior oblique muscle was exposed by dissecting off the conjunctiva without in any way interfering with the surrounding parts; by means of two fine wires, a slight electric current was then directed through the muscle. The effect was a rapid rotation of the eye upon its antero-posterior axis, so that a piece of paper placed at the outer margin of the cornea passed downwards and then inwards towards the nose. The superior oblique was then exposed at the back of the orbit, and was treated in the same manner. The rotatory movement produced was precisely the reverse of the former; the paper at the outer margin of the cornea passed upwards, and then inwards towards the nose. In the case of the superior oblique the movement was less extensive, the irritability of the muscle being less, perhaps from the delay in exposing it and from some slight injury inflicted on it in so doing. There could be no doubt as to the direction of the movement in both cases; there was not the slightest appearance of elevation, depression, abduction, or adduction, of the cornea. The experiment was subsequently repeated on another dog with precisely the same result.

33. *Muscae volitantes*. Dr. Jago‡ considers that those minute globular particles, which may always be seen in the healthy eye by looking through a card with a small aperture, (and which, when in great abundance, and visible without looking through the aperture in a card, are called *muscae volitantes*,) are seated in the vitreous humour, and constitute a natural and essential part of this fluid. That they exist in a fluid is manifest from their floating and moving about in the interior of the eye; thus, when we raise the eye to look at an object, they evidently continue to move in the same direction even after the eye is stopped; and then, after balancing a moment, commence to descend again to their usual places. That they are near to the retina and far from the cornea seems proved by this experiment: when a card (through a small aperture in which we are looking) is moved across the axis of the eye in any direction, these little particles move in the same direction, but through a less space than that travelled by the card, or by a tear which we can see. These two circumstances seem to point to the vitreous humour as the seat of *muscae volitantes*.

#### § VII.—Generation.

34. *Analogy of menstruation with the "rut" of animals, &c.* Few subjects have had so much attention directed towards them, or have been so fully investigated of late years as those which have reference to the phenomena of menstruation, the maturation and discharge of ova, and the formation of corpora lutea. All have received considerable elucidation, and the result has been that many highly interesting and important points have been ascertained concerning each, and what was before considered strange and anomalous, is now shown to be all order and harmony. Thus menstruation, which until of late was almost universally regarded as peculiar to the human female, is now proved beyond doubt to be analogous in all essential particulars to the phenomena attending the process of *heat* or *rut* in animals. The investigation of many British and continental physiologists have established the truth of this analogy almost beyond question.

\* Muller's Archiv, 1340-1-2. See also the pathological evidence by Szokalski, and other confirmatory facts in Longet, Du Système Nerveux, tome ii, p. 386.

† Palmer's edition of Hunter's works, vol. iv. p. 274.

‡ London Med. Gazette, May 16, 1846.

Among the most recent labourers on the subject of menstruation is Mr. Girdwood, who, in a capital paper,\* has summed together most of the facts establishing the above-mentioned analogy, and has, moreover, strengthened these facts by the results of several original experiments. He draws attention to the following conclusions, (the first two of which, however, have been also well established by the researches of Bischoff, Raciborski, and other recent inquirers.) 1st. The catamenia appear in lower animals as well as in the human female, and whilst the discharge is characterized in them as in her, by a periodicity peculiar to each separate genus, it is (at least in the higher orders of mammals) equally sanguineous in them as it is in woman. From observations on the dog, rabbit, cow, and mare, Mr. Girdwood proves that the occurrence of a periodic discharge in them attends the phenomena of heat, and the discharge microscopically and chemically bears a more or less close resemblance to that of the human female, and he observes that in passing up through the series of animated beings, it would appear that the nearer we approach man, the more the catamenial discharge approximates in character that of our own species. It appears in all to consist of a profuse periodic flow of the usual mucous secretion of the organs of generation, with, in the higher genera of animals, the super-addition generally, of more or less blood diffused in the secretion, and from this its diffusion deprived of its usual amount of coagulation. 2d. In woman, and in the females of all animals in which the periodic discharge is apparent, the discharge is indicative of the maturation of an ovum, and of its being on the point of elimination from the ovary; and the capability for impregnation is, during menstruation, at its acme. This corresponds with the observations of Bischoff, Pouchet, Raciborski, &c., and is now a generally adopted principle; for although, on account of the minute size of the human ovum and the rare opportunities afforded of examining the bodies of women who have died during the menstrual period, it is difficult to prove the question beyond doubt by the discovery of ova, yet sufficient observations have been made to render it pretty certain that the above observation is correct, so far as the human female is concerned. With regard to animals, numerous observations and experiments, especially those by Bischoff and Raciborski have rendered it quite certain that at every period of heat one or more ova are matured and discharged from the ovary, and this moreover quite independent of sexual intercourse. The statements of these eminent physiologists are founded on the surest of all evidence, the actual detection of ova in the fallopian tubes of animals in whom sexual intercourse had not taken place; thus Bischoff found in a lamb, killed a few hours after becoming in rut for the first time, (and in whom coition had not been effected,) a ruptured Graafian vesicle in the right ovary, and an ovum in the corresponding fallopian tube. Again, in a bitch two days after becoming in heat, and apparently inclined to admit the male (which it was prevented from doing,) Bischoff extirpated the left ovary and fallopian tube, and closed the wound by suture; no Graafian vesicle in this ovary had burst, but four were extremely turgid. Five days afterwards the bitch was killed; four large cornua lutea were found in the right ovary, and four ova in the corresponding fallopian tube. From this it appears quite certain, as Bischoff concludes, that during the rut of animals, ova become detached from the ovary and enter the fallopian tube where they perish, unless sexual intercourse coincidentally occurs, in which case the ova in all probability become impregnated. The same may be considered to hold good in the human female.† Premature appearance of the catamenia seems to depend, according to Raciborski, on the precocious development of the ova; a circumstance in favour of this opinion is the invariable coincidence of development of the mammae and external genital organs with the

\* *Lancet*, December 7-14, 1844.

† For an account of Bischoff's and Raciborski's observations on the periodical discharge of ova and on menstruation, see a review of their labours in the *British and Foreign Medical Review*, Jan. 1845; also the translation of Bischoff's last work, by Mr. Henry Smith, in the *London Medical Gazette*, Jan. 3, 17, &c., 1845. These researches do not all strictly belong to the contributions of the last six months, yet they are noticed here, because for the most part they have only become generally known in England during the present year, and are now being discussed in our journals.

occurrence of the hemorrhage, in cases of premature menstruation. There are still wanting observations to show what is the exact purpose served by the periodical discharge of a sanguineous fluid attending the maturation and discharge of ova; numerous ingenious suggestions have been made, but the right one does not seem yet to have been hit upon. There seems no doubt but that all the phenomena of menstruation are primarily dependent on the ovaries, which act sympathetically on the uterus, as well as on other organs. A main argument which has been advanced against menstruation in the human female being a process identical with the rut of animals, is the disinclination to sexual intercourse evinced by woman during the menstrual period, whilst it is only during the period of rut that animals will admit the male; but this Bischoff (as also Mr. Girdwood) considers to be the result of habit and the natural delicacy of the sex, rather than of actual disrelish; and it is most probable that in woman as well as in the females of animals, the desire for sexual intercourse is greatest at the menstrual period or heat, especially towards the decline of the discharge; at which latter period, from observations on animals, it is proved that the ova are usually discharged; bitches are generally observed to be languid and to refuse the male during the first few days of heat, but after this they become lively and readily admit of being lined; so, analogous to this is the ailment of the human female during the early part of each menstrual period, and previous to the discharge becoming fully established. 3d. A third conclusion arrived at by Mr. Girdwood, in the above-mentioned paper, is, that the periodicity in the maturation of ova and of the attendant phenomena of menstruation is applied to most of the leading phenomena of nature which are dependent upon heat, and that like these it is influenced by seasons. This is ingenious, but wants more extended observations for its establishment.

35. *Discharge of matured ova, &c.* Besides proving that at each period of heat in animals ova are regularly discharged, whether sexual intercourse coincidentally takes place or not, Bischoff has added some curious observations, showing that the bursting of the Graafian follicles, and consequent discharge of ova, is entirely independent of sexual orgasm, or of the influence of spermatozoa; thus: (a) Coitus may take place, and examination of the ovaries, six, eighteen, or twenty hours afterwards, prove that no ovum has escaped, although spermatozoa may have reached the ovaries. (b) Examination immediately after coitus may detect ova which have advanced two or more inches along the fallopian tube, to have done which they must have started some considerable time before the act of coition. Bischoff considers it to be immaterial at what part of the fallopian tube the spermatozoa and ovum come in contact; so that they meet before the ovum has reached the uterus, impregnation is sure to take place. He states that he has clearly traced live spermatozoa up to the ovaries; this statement, and the inference he deduces from it, that fecundation of the ovum may take place at any part of the fallopian tube, is called in question by M. Pouchet,\* who has recently offered a table showing hourly the progress and condition of the spermatic fluid in the generative apparatus of the mammiferous female. His experiments were chiefly made on rabbits. From the 16th to the 25th hour after copulation, live spermatozoa were constantly found in the vagina and uterine horns. Even to the 21st or 23d hour these animalcules (?) continued very active, but shortly after that, they lost their vivacity, and died towards the 25th hour; so that nothing but broken-up tail-less spermatozoa could be seen. He was never able to see live spermatozoa reach more than a very short distance up the uterine extremity of the fallopian tube; and he considers the observations of Bischoff and Wagner, who had found live spermatozoa on the ovaries, to be erroneous. According to his own view, it is in the uterus alone, or probably also at the mouth of the fallopian tube, that impregnation of the ovum can be effected. [To this it can only be said, that the positive evidence of Bischoff ought to receive more consideration than the negative statement of Pouchet, and that if the latter be correct in his views, it will be difficult to account for the mode in which extra-uterine or ova-

\* Bulletin des Académies, Janvier, 1845, p. 64.



rian impregnation takes place, whilst the observations of Bischoff explain it at once.\*]

36. *Corpora lutea*. The great importance, in a medico-legal point of view, of determining the true nature of the "corpus luteum," and of ascertaining how far its existence could be safely relied on as proof that sexual intercourse and consequent conception had taken place, has of late years led to numerous investigations on the subject. Although the descriptions of corpora lutea given by most observers differ somewhat from each other, yet, on the whole, they so far correspond that, generally speaking, there can be no great difficulty in pronouncing whether or not a given substance found in an ovary be a true corpus luteum; such a one, at least, as is formed when a matured and discharged ovum has been impregnated. From Dr. Ritchie's observations,† it would seem that one cause of the discrepant accounts given of the corpora lutea, may be found in the varying characters which these structures occasionally present; thus, concerning the seat of the yellow deposit, about which there has been so much dispute, Dr. Ritchie states that it may be situated either on the exterior of the ruptured Graafian follicle, between its layers, or within its interior; he considers the yellow mass to be an hypertrophy of the granular layer lining the internal membrane of the follicle. Besides varying in seat, Dr. Ritchie states that the corpora lutea also vary to a considerable degree in aspect and character, some being of a white colour (*corpora albida*), and either of a soft fatty aspect, or dense and shining; others (*corpora cephaloidea*) are yellowish, and of a brain-like character; and another class (*corpora rubra*), which are at first similar to the last, although they are plumper, more vascular, better developed, and the granular matter of which they are composed subsequently becomes of a decided red colour.‡ There has always been considerable difficulty in deciding the question, whether or not the presence of a so-called true corpus luteum could be relied on as a proof of conception. Many have considered it to be an infallible test, and have based their evidence upon it, in medico-legal inquiries; but some late observations of Bischoff and Raciborski seem to prove, that not merely as a result of conception, but at each menstrual period, the discharge of an ovum was followed by the formation of a corpus luteum; in this conclusion, however, there is no doubt they were mistaken, and by the following recent observations, Raciborski admits that they were so, although Bischoff still maintains that what he has observed to take place in animals, namely, the formation of a true corpus luteum after each period of heat, takes place in the human female also; this offers a good instance of the danger of drawing conclusions from analogy alone, for although it appears certain that a corpus luteum is formed at each period of heat in animals, which is undistinguishable from that formed after conception, yet any one who has had frequent opportunities of examining human ovaries will be aware how seldom true corpora lutea are found in them, and that they only exist in cases of pregnancy; or where delivery has but recently taken place; whereas, if, as Bischoff supposes, a corpus luteum is found at each menstrual period, one ought to find several in almost all the ovaries of those who die during the age in which the habit of menstruation continues. The clots of blood in various stages of discoloration (according to their age), so commonly found in ovaries, although they indicate a ruptured (Graafian vesicle and the discharge of a matured ovum, yet they bear no resemblance or analogy to the yellow mass observed when the discharged ovum has become impregnated.

The following conclusions of M. Raciborski§ are especially important since they correct his previous statement that a corpus luteum is formed at each menstrual period in the human ovary, and that its existence cannot be regarded

\* The various experiments of Professor Bischoff are fully detailed in the translation by Mr. H. Smith, in the Medical Gazette, January 3, 17, &c.

† Review of Dr. Carpenter's Physiology, Medico-Chirurgical Review, April, 1845, p. 340.

‡ L. c. p. 340.

§ Bulletin de l'Académie Royale de Médecine, November 15-30, 1844, p. 114. A translation of them is given in the Edinburgh Medical and Surgical Journal, April 1845, p. 514.

as a proof of conception. His present views confirm the observations of Deschamps.\*

1. The corpus luteum is the result of an hypertrophy of the granular layer lining the internal or proper membrane of the Graafian follicle; the only difference between the corpus luteum and this granular layer is that the granulations of the former are larger and more numerous, and contain many more yellow oil-globules.† 2. The transformation of the granular layer into a corpus luteum commences as soon as the ovum is matured and the follicle ready to discharge it. 3. As soon as the Graafian follicle is ruptured, the process of transformation becomes more active; but in the human female the degree of activity varies greatly, according as the expulsion of the ovum is spontaneous, as during a menstrual period, or coincides with sexual intercourse, and is followed by conception. In animals this difference does not exist; whether expulsion of the ovum has been followed by coition or not, a true corpus luteum forms. In the human female, however, if expulsion of the ovum has not been followed by conception (as occurs at each menstrual period) the granulations certainly increase, but their activity of growth stops short when they have formed a thin, yellowish membrane, which lines the inner tunic of the vesicle, and is found to contain within it a clot of blood, more or less altered, according to the period at which it is examined. If, on the contrary, conception coincides with expulsion of an ovum, the granulations rapidly increase in size and number, and shortly form a yellow mass, quite filling the cavity of the follicle, or leaving at the most a white fibrinous-looking streak in the centre, indicating the existence of a former cavity. 4. In all cases this corpus luteum remains of its full size to the end of pregnancy; but after delivery it rapidly disappears, so that at the end of three months nothing but a small and almost colourless spot will remain. 5. It results from the above that by simple inspection, one can readily distinguish cases of simple spontaneous expulsion of ova from those in which the expulsion has been followed by conception.

37. *Structure of the uterus.* The following observations on the arrangement of the muscular fibres of the uterus, by M. Jobert de Lamballe, are extracted from the American Journal of Medical Sciences.‡

The fibres of the single muscle which forms the uterus are arranged in layers, and present the following direction: the longitudinal superficial fibres, which may be called median from their position, are seldom seen on the anterior surface, but are constantly met with on the posterior, where they constitute two superincumbent layers. 1. Posteriorly they begin at the fundus of the uterus, and end at the uterine extremity of the vagina, to which they become attached, with the exception of some few that terminate on the neck of the uterus; they adhere by one surface to the peritoneum, by the other to the oblique fibres. 2. The anterior superficial fibres do not pass along the entire extent of the uterine parietes, but cross each other before they arrive at the round ligament of the opposite side. Some contribute to form this ligament, whereas others pass behind, and terminate on the lateral regions where they cross those of the posterior region. 3. There are other superficial fibres, only evident during pregnancy, which are destined to the fallopian tubes, and to the ovarian ligaments. Some originate at the fundus of the uterus, unite to those which contribute to form the fallopian tubes, and pass on to the anterior part of the ovarian ligament; others, more numerous, originate from the posterior surface of the fundus, and pass on to the same ligament. Lastly, a few transverse fibres from the posterior surface, form its inferior part. The numerous fibres which pass on to the fallopian tubes originate at the fundus of the uterus, and form a thick fasciculus, which divides into two secondary fasciculi, destined one to the ovarian ligament, the other, more voluminous, to the fallopian tube. Some fibres separate from the common fasciculus, and lose themselves in the cellular tissue which separates the fallopian tubes

\* Gazette Médicale, July 20, 1844.

† In this view Raciborski is confirmed by Pouchet, who considers the corpus luteum to be due to an increased development of the membrana propria of the graafian follicle. Comptes Rendus, 10 Mars, 1845, p. 606.

‡ January 1845, p. 181.

from the round ligament. The deep fibres are very visible when the uterus has undergone rather lengthened boiling. They all evidently present a semi-circular direction, are rather oblique, and only differ from those above described by their small size, and by their belonging exclusively to the body and to the neck of the uterus. They cross each other on the median line anteriorly and posteriorly, as also on the sides, so as to produce a kind of network. Their thickness varies as they approximate the internal surface of the uterus, where they appear to describe circles exterior to the internal membrane. There are annular fibres along the fallopian tubes, which do not entirely encircle it, and are deep seated. Lastly, the blood-vessels are encircled by fibres similar to the deep muscular layer which surrounds the intestinal canal. The uterine neck is formed by fibres which constitute semicircles, and decussate without mingling. The muscular fibres of the vagina are posteriorly continuous with the longitudinal fibres of the uterus, but anteriorly they terminate abruptly, at the junction of the vagina with the uterus.

In order to empty the uterus of its contents, the longitudinal fibres tend to diminish the length of the uterus, whilst the semicircular ones diminish its cavity in every other direction.

38. *Structure of the human placenta.* In giving an abstract of the following observations on the structure of the placenta by Mr. Goodsir, it will render the subject more intelligible to divide it into three heads, as adopted in the original memoir:—

1st. Each placental tuft consists of a trunk, of primary branches, and of secondary branches or villi. Each villus is made up of the following parts: (a) An external fine transparent membrane. This membrane is common to the whole tuft, passing from one villus to another, and closely covering the free surface of each. (b) A layer of flattened nucleated cells beneath this membrane, (*external cells* of the villus,) here and there these cells are grouped together into heaps, in the centre of which is a germinal spot, which is engaged in the constant formation of new cells.\* It seems probable that the internal aspect of this layer of cells is lined by a fine membrane, as in the case of the intestinal epithelium. (c) Beneath these structures, and immediately surrounding the blood-vessels within the villus, is another still finer and more transparent, but firm and strong membrane, (*internal membrane* of the villus.) This is readily separable from the layer of cells described: the space between them is probably occupied by a peculiar fluid. (d) Within this membrane are the blood-vessels of the villus, consisting of one or sometimes two vessels, which form a simple or contorted loop occupying the cavity of the villus; they are derived from the umbilical arteries and veins; they differ from capillaries in their large size, and from arteries and veins in preserving the same mean diameter throughout: one such vessel occasionally passes from one to two or more villi, forming a loop in each, before it becomes continuous with a vein. (e) Between these vessels and the internal membrane are some other cells, nucleated and highly transparent, called the *internal cells* of the villus.

2d. (a) The substance of each tuft of the chorion is made up of nucleated cells of various sizes, containing a granular fluid. (b) The surface of the tuft is covered by a fine membrane, which consists of flattened cells united by their edges. (c) The free extremity of each villus of the tuft is bulbous, and consists of transparent cells arranged round a central germinal spot. These groups of cells are the active agents by which the villi grow. (d) As gestation advances, and the allantois becomes applied to the internal surface of the chorion, blood-vessels become developed within the villi, which then communicate with the umbilical vessels. (e) Thus, then, the villi of the chorion form the internal (or fetal) portion of the placental villi, previously described,—the loops of vessels, internal cells, and internal membrane of which have their origin in the villi of the chorion.

3d. (a) When impregnation has taken place, the mucous membrane of the uterus becomes greatly developed; the epithelial or cellular secretion of its follicles

\* Vide nutritive centres.

becomes augmented, and the vascular network occupying the outer follicular spaces becomes increased in size and extent. By this means a new layer or membrane is produced, the *membrana decidua*, which consists of two portions, the thickened vascular mucous membrane and the non-vascular cellular substance secreted by the follicles. The former constitutes at a later period the *decidua vera*, the latter the *decidua reflexa*. (b) As the (impregnated) ovum reaches the uterus, the developed mucous membrane or decidua begins to secrete, the os uteri becomes plugged up with a portion of the secretion, and the cavity of the uterus is filled with fluid—around the ovum this secretion consists of spherical nucleated cells, which possess the power of undergoing further development after being detached from the germinal spots or membrane of the secreting organ. These cells around the chorion of the ovum come to constitute the *decidua reflexa*. (c) Thus the tufts of the chorion are imbedded in a mass of nucleated cells, which cells are constantly being secreted from the follicles of the uterus, and which in all probability contain within them as they become fully developed, the nutritive materials, which the absorbing cells of the villi of the chorion are constantly taking up for the nourishment of the ovum. This cellular secretion seems thus to be to the ovum of the mammal what the albuminous fluid is to the ova of oviparous animals. (d) As the ovum increases in size, the amount of nutriment absorbed by the cells alone, is not sufficient for its wants; the allantois becomes applied to the inner surface of the chorion, and blood-vessels become developed within the tufts and villi. The vessels of the decidua vera at the same time enlarge and assume the appearance of sinuses encroaching on the space formerly occupied by the cellular substance of the decidua reflexa, in the midst of which the villi of the chorion are imbedded. Thus the lining membrane of the vascular system of the mother becomes the *external membrane* surrounding the villi of the placenta. It lines the whole placental cavity, passing from tuft to tuft, and villus to villus, forming in this way threads and bands of venous membrane, which are tubular and filled with cells. These cells are continuous in the one direction with the *external cells* of the placental villi, and in the other with the gelatinous cellular substance constituting the *parietal portion* of the placental decidua, which is in connection with the wall of the uterus. The *central portion* of the placental decidua consists of the external cells and external membrane of the placental villi.

It appears from the above:—

1st. That the placental tufts and villi are made up on the one hand by the tufts and villi of the chorion, comprising umbilical vessels, internal membrane, and internal cells; and on the other hand by the lining membrane of the maternal vascular system, with a layer of cells beneath it, comprising the external membrane and external cells—the first portion is peculiar to the fœtus, the latter to the mother.

2d. These external cells are the remains of the decidua reflexa; they are still continuous with the cellular substance of the parietal placenta, by means of the cells filling the tubular threads of venous membrane.

3d. The function of the external cells is to secrete from the maternal blood (from which they are separated only by the external membrane) the materials of nutrition destined for the fœtus; this function is analogous to the digestive one performed by the intestinal mucous membrane in extra-uterine life.

4th. The function of the internal cells or those belonging to the fœtus is to absorb through the internal membrane the materials secreted from the maternal blood by the external cells. This matter is then taken up by the umbilical vessels and carried away for the nourishment of the fœtus. These internal cells perform a function analogous to that affected in extra-uterine life by the absorbing chyle-cells of the intestinal villi.

5th. Hence the placenta discharges not only the functions of a lung, but also of an intestinal canal to the fœtus.\*

39. *Respiration of the embryo.* MM. Baudrimont and Martin St. Ange hav-

\* Anatomical and pathological Researches, by John and H. D. S. Goodair.

ing continued their researches on the absorption of oxygen by ova during their embryonic development, found in all their experiments on the eggs of hens, turkeys, adders, lizards, and many species of batrachians, that there occurred in each a true respiratory process, consisting in the absorption of oxygen, and the exhalation of carbonic acid, nitrogen, and watery vapour.\*

[It would appear that this process is essential to the development of the embryo. The exhalation of carbonic acid and watery vapour is, no doubt, the result of combustion of carbon and hydrogen by means of the absorbed oxygen; the effect of which will be the generation of a certain amount of heat, independent of that afforded by the mother in the case of birds, and will in part account for the elevation of temperature above that of the surrounding air, observed in some reptiles during incubation.]†

40. *Meconic membrane.* Dr. Ridge,‡ in a recent work, describes the existence, during fetal life, of a membranous sac, lining the mucous membrane of the whole alimentary canal, and serving for the "envelopment and security of the meconium." He gives it the name of "*membrana meconii*." What purpose could be served by such a membrane, which is not adequately performed by the intestinal mucus, it is difficult to conceive. Most probably a compact layer of such mucus investing a portion of meconium has deceived Dr. Ridge into the belief of having discovered a new tissue. Not one alone, however, for he mentions a "*rete vasculare*," which he describes as a net-work of the most delicate blood-vessels, situated between the *membrana meconii* and the true mucous membrane. The existence of this vascular network, and consequently of the office attributed to it, of maintaining the nutrition of the *membrana meconii*, is, we must confess, as improbable as the existence of the membrane itself.

#### § VIII.—Miscellaneous Subjects.

41. *Effects of extirpation of the spleen and thyroid gland.* From Mr. Bardeleben's experiments§ it results, that the animals which survive the extirpation of the spleen appear speedily to recover their health, and present no difference from those which have not undergone this operation. He never remarked that they were more voracious than other animals, though it has been said that voracity is generally produced. In no case was the organ regenerated, though Meyer of Bonn has observed this. After removal of the thyroid the health was not sensibly affected. In one rabbit, the venereal appetite was considerably augmented; a circumstance worthy of remark, seeing that it has often been asserted, that removal of that gland abolished the venereal appetite. The animal deprived of both spleen and thyroid gland presented no change in any function. This fact is in opposition with the opinion of Tiedemann, that the lymphatic glands and thyroid body performed the functions of the spleen when that organ was extirpated. Finally, some physiologists have advanced the opinion that extirpation of the spleen produced augmentation of the venereal appetite, but abolition of the procreative faculty. M. Bardeleben satisfied himself of the incorrectness of this opinion, by breeding with dogs which had both spleen and thyroid extirpated.

Professor Meyer of Bonn,|| has offered further proof that after extirpation of the spleen the small lymphatic glands in connexion with the splenic artery become enlarged, coalesce, and, in no long time, form masses of considerable size, which doubtless perform to a certain extent the functions of the extirpated organ. In ducks and hens ten months sufficed for the production of a glandular mass equal in size to the original spleen. This speedy formation of a new organ discharging the functions of a spleen, will account in part for the trifling subsequent derangement resulting from its extirpation.

\* Bulletin des Académies, Janvier 1845, p. 68.

† See Mr. Paget's Report, April 1845. P. 592 of British and Foreign Medical Review.

‡ Physiology of the Uterus, Placenta, Fœtus, &c. 1845, p. 52, et seq.

§ Edinburgh Medical and Surgical Journal, Jan. 1845.

|| Medical Times, March 29, 1845, p. 550.

42. *Parasitic animalcules in the sebaceous follicles.* M. Gruby gives an account of these animalcules, the existence of which was discovered by the late M. Simon.\*

In man this parasitic insect is met with most commonly in the sebaceous glands of the skin of the nose. It usually occupies the excretory duct of the gland, and when there is a hair, the insect surrounds it. Its head is directed towards the base of the gland, its tail towards the surface of the skin, its feet are applied to the internal wall of the excretory duct. The duct is usually dilated at the part where the animal is lodged. In young persons there are never more than two or four parasites in each gland, but in persons of twenty-five and upwards, there are from four to eight. In still older individuals there may be from ten to twenty, in which case almost all the sebaceous glands are affected. They are common to most persons whether in good health or in disease.

It is only in large numbers in the glands that any irritation results, and then they produce that red, elevated, and tender spot at the orifice of the duct so commonly seen about the nose. These parasites exist abundantly in dogs and produce a very formidable and contagious disease. M. Gruby gives an anatomical and zoological description of these animalcules.†

43. *Influence of hot air on animal life.* The results of some late experiments by Magendie,‡ prove that no animal can endure the temperature of its body being increased more than 9° F. beyond its natural state. Thus two rabbits, the natural temperature of whose body is 102° F., were severally placed in stoves, the one heated to a temperature of 140°, the other to that of 212°. After a short time the temperature of both rabbits rose to 111° F., that which was in the hottest stove being the first to attain that temperature. He repeated the same experiment many times on different animals, but in no case did the temperature of the animal increase more than nine degrees. The same occurred with birds. Having attained this increase of temperature, the animals and birds in every case soon died; their arterial blood was found dark, like venous blood, did not redden on exposure to air, and had lost its property of coagulating.

The increase of temperature seemed to be attained chiefly through the medium of the skin, for when the head of an animal was confined in the heated stove, so that it breathed the hot air, the elevation of temperature was much less in an equal period of time than when the body was exposed to the heated air, and the head was out of the stove. Thus a dog, whose body was within the stove, but the head out, lived only twenty-two minutes; but another, whose head was within the heated stove, and the body out, lived forty minutes.

An animal placed in a dry heated stove loses weight, but the amount lost is proportioned to the length of time the animal remains within the stove, not to the degree of heat, and the loss is no greater at the temperature of 212° than at one of 140° in an equal space of time. In stoves heated with moist air on the other hand, Magendie found that instead of losing they often gained weight. Death occurred much sooner in these stoves than in the ones heated with dry air.

[The results of these experiments are especially interesting when compared with the observations made by M. Constantine James regarding the effects on the body of the hot moist air of the baths or stoves of Nero, at Pozzuoli.§ The greatest amount of heat which M. James could endure in the hot moist air of the passage leading to the springs was 123° F.: when he had arrived at that part of the passage where the atmosphere had attained this temperature, he was utterly exhausted, and had nearly lost his consciousness. He was almost suffo-

\* 'Valler' Archives, June 1842.

† Comptes Rendus, Mars 3, 1845, p. 569 et seq. A very elaborate description of them is given by Mr. Erasmus Wilson, in the Philosophical Transactions, 1844, page 306; he applies to them the name of entozoon folliculorum.

‡ American Journal of Medical Sciences, January 1845, p. 153.

§ For an account of which see Mr. Paget's Report, January 1845, p. 237, and Gazette Médicale, 27 Avril, 1844.

cated at a temperature of 112° F., whereas, in the caves of Lastaccio, in which the heated air is dry, he was enabled to bear without much discomfort a temperature of 176° F.]

44. *Anatomy and use of the thymus gland.* On this subject we are fortunate in being able to refer to some recent researches by Mr. Simon,\* the value and importance of which has attained for them the high honour of gaining the first Astley Cooper prize. In the endeavour to place before our readers a brief abstract of this work, we shall omit the author's very concise and accurate history of the labours of former writers, and proceed at once to the discussion of the original portion of his labours.

The first appearance presented by the gland, as observed in the foetal calf, is that of a simple tube lying along the carotid vessels, and exhibiting faint traces of commencing areolar tissue. The contents of the tube at this time are granular, but do not contain any distinctly formed corpuscles. Mr. Simon suspected that this tube was not the primary condition of the organ, but that it might exist at an earlier period in the more simple form of a string of primordial cells; he has not, however, been able to verify the suspicion. He refutes the opinion of Arnold, (*Lehrbuch der Physiologie*, tom. ii, p. 265,) that the thymus is a development of the respiratory mucous membrane, as well as that of Bischoff, that it is in some way connected with the thyroid gland. The development of the gland proceeds in the same manner as that which has been observed as the primordial tube of the true glands, that is to say, by the addition of diverticula, which spring from the sides of the tube. These diverticula, when they have arrived at three fourths of a sphere, themselves give rise to secondary bulgings, which again reproduce others, until at length by the repeated occurrence of the same process, conjoined with a continued interstitial molecular increase, the organ attains the bulk and complexity of the structure exhibited by it in the mature state of the foetus.

The researches of Mr. Simon confirm in the main the dissections of Sir A. Cooper, with respect to the existence of a central cavity; he thinks, however, that it has hitherto been supposed to be larger than it really is. They likewise accord with those of Haugsted, in reference to the period at which the thymus attains its greatest size, this being, not as is commonly supposed during intra-uterine life, but at a certain period after birth. This exact time it is not easy to ascertain, as it is probable that it varies in different instances; it has, however, been laid down as a law by the author, that its bulk is inversely as the amount of mortality and consequent exhaustion of tissue, and its duration, therefore, dependent upon the period at which muscular activity becomes established. In reference to this point the author has arrived at the following results:—1st. During the period next succeeding birth, the activity of the thymus is remarkable; it increases considerably in size, becomes turgid with secretion, and its specific gravity is lowered by the greater fluidity of its contents. This first growth is far out of ratio to the general increase of the body. 2d. For several months it continues to increase at a diminished rate, and merely in proportion to the general growth of the body; its further enlargement ceases about two years after birth. 3d. From this time, during a very variable number of years, it remains stationary, and, supposing the individual to be adequately nourished, gradually assumes the structure of fat. 4th. The duration of its decay, and the epoch of its entire vanishing are still more uncertain; about puberty, it seems in most cases, to suffer its chief loss of substance, and to be reduced to a vestigiary form.

The first appearance of this organ before birth is supposed by anatomists to be as early as the fifth week after conception, but in the tenth week of pregnancy it is sufficiently perceptible to the naked eye. It, at this time, exhibits a distinct tubulo-vesicular structure. The third chapter of the work contains a description of the mature gland. Its mode of formation has been already alluded to, it remains only to mention the intervesicular structure and the contained fluid. The intervesicular tissue is a prolongation of the wall of the original tube, and

\* *Physiological Essay on the Thymus Gland.* 4to. London, 1845.

consists of an indescribably fine membrane, over which a close capillary network is spread for the purpose of supplying materials for secretion. This secretion consists of a fluid in which, as was discovered by Hewson, microscopic corpuscles were seen to float. These corpuscles are circular discs of nearly the same size as the coloured particles of the blood. Their average diameter is  $\frac{1}{1000}$  of an inch. They are marked by minute dots which are supposed to be molecules of fat in combination with fibrine or solid albumen.

The author gives three separate chemical analyses of the thymus fluid, all of which concur in demonstrating the error of the opinion that it was essentially a highly carbonaceous product. It is proved by them on the contrary that the fluid contains no more carbon than enters into the composition of muscle and blood.

The nerves of the thymus are derived from the inferior and middle cervical ganglions and from the cardiac branch of the pneumogastric nerve.

In the comparative anatomy of the gland, the author's researches have been very extensive, but our space will not allow of a repetition of the different tribes of animals in which he has carried on his investigations, we shall content ourselves with giving the following summary of the results to which they lead. 1st. The presence of the gland is coextensive with pulmonary respiration. 2d. Its shape and position are variable and unimportant. 3d. Its size and duration are, generally speaking, in proportion to the habitual or periodical activity of the animal. 4th. Where it remains as a persistent organ (as in the hibernating tribes) it is one of the general reservoirs for the accumulation of nutritive material.

In further prosecuting the developmental anatomy of his subject, the author next passes in review the morphological history of the true glandular system, with which he contrasts that of the thymus and its analogues, the thyroid, supra-renal glands, and the spleen. The principal difference between the two orders of organs appears to consist in the ultimate arrangement of their secreting cells, that of the true glands being distinctly cellular, that of the glands without ducts, consisting of the cytoblast alone, the involving cell-structure being only of exceptional formation. It is a curious fact, however, that in those animals in which the thymus becomes a permanent organ, the nucleus instead of being simply surrounded by aggregate molecules, as in the temporary state of the organ, is converted into a perfect cell. These different points are rendered plainly intelligible by the plates with which Mr. Simon's work is liberally illustrated.

We now pass on to the most remarkable part of the work, the physiology of the gland. It is thus stated by Mr. Simon:—

"It secretes into a closed cavity certain particular elements of nutrition, which are deposited differently under different circumstances, viz.:—1st. In most animals it occurs only temporarily, the secreted matter then presents itself under a fluid form, and closely resembles the liquor sanguinis in ultimate chemical composition. 2d. In some animals, after discharging this temporary function, it assumes one of greater permanency, the sequestration of material in the form of solid fat. In both cases, however, though peculiar, the function is especially the same, and consists in the laying by of nutrient material. How this is used up, Mr. Simon next proceeds to show. Here, however, we are called to notice a certain circumstance which is co-existent with both the temporary and the permanent function of the gland, viz., that in both, waste of tissue is at a minimum. In the younger animal, muscular activity, which mainly contributes to this waste, has not commenced; in the hibernating animal it is suspended. Now the waste of tissue being at a minimum, the pabulum for the support of the respiratory process, must be supplied from some other source."

This source Mr. Simon declares to be the nutritive matter laid up in the central cavity of the thymus as in a reservoir, and he therefore assumes the office of that gland to be that of sequestering nutritive matter, whereby it becomes "a sinking fund of nourishment in the service of respiration."

We must apologise for this imperfect analysis of this really valuable publication, our excuse must be that it only came to hand while the preceding pages were in the press. We were anxious that no time should be lost in making our



readers acquainted with its new and important contents, otherwise we should have postponed its consideration for our next volume.

Upon the subject of the use of the thymus gland, we have next to mention a recent essay by Dr. Picci,\* a review of which appears in the *Medico-Chirurgical Review*, of January, 1846; as will be seen, he recurs to a theory propounded nearly two thousand years ago. After glancing at the theories of his predecessors, Dr. Picci suggests that the use of the thymus is chiefly of a mechanical nature, viz., to occupy a certain space within the thoracic cavity, while the lungs remain unexpanded in the fœtus; and thus to prevent the ribs and sternum from falling in too much upon these vital organs. The size of the thymus is inversely as the volume of the lungs; and when the latter become dilated after birth by the admission of air into their cells, the former immediately begins to shrink and becomes atrophied. In truth, it is only in the adult that the thoracic parietes are moulded completely upon the lungs; for in infancy and youth it is rather the thymus that is, in their place, moulded upon the thorax. The situation of this gland, the very nature of its tissue, and the greater expansion and development of its inferior half are adduced as arguments in favour of this opinion besides the well-known circumstance that, in those new-born children in whom the thorax is very largely developed, the thymus continues to increase gradually even to the end of the second year, it deserves notice that all those animals, in which the lungs are similar to those in the human subject, are provided with this gland; whereas we find it entirely wanting in those which breathe by branchiæ and membranous lungs. In hybernating animals, also, the thymus exhibits alternations of enlargement and decrease, according to the state of the respiratory organs. In the amphibia it attains its maximum of development. The circumstance too of the gland being usually rather larger than ordinary in phthisical patients, may be mentioned as lending some probability to the view proposed.

\* Dell' ufficio del Timo, &c., Annal. Univers. di Medicina, vol. 107.

## V.

REPORT ON THE PROGRESS OF PHYSIOLOGICAL AND  
PATHOLOGICAL CHEMISTRY.

BY GEORGE EDWARD DAY, M. A., L. M. CANTAB.

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THE arrangement adopted in this Report corresponds, in most respects, with that adopted by the late Dr. Simon of Berlin, in his *Chemistry of Man*. After noticing the most important recent discoveries relating to the chemical constitution of the human body, we commence with the blood, lymph, and chyle, in health and disease; and then consider, in the following order of succession, the fluid secretions of the chylopoietic viscera, together with the process of digestion; the milk; the secretions of the skin and mucous membrane; the urine; fæces, and vomited matters; solid tissues; and lastly, miscellaneous morbid products.

## § I.—Chemical Composition of the Body.

1. *Protein Oxides.* Mulder\* has continued his researches respecting the oxidation of protein with the greatest success. He has clearly established the existence of two distinct oxides of protein, to which he has assigned the names of binoxide and tritoxide of protein, because the former contains two or the latter three more atoms of oxygen than pure protein does. Before proceeding to notice these compounds further, we may remark that recent analyses have confirmed the accuracy of Mulder's original formula for protein ( $C_{40} H_{51} N_5 O_{15}$ ), and have shown that it gives results approximating more closely to the truth than the formula  $C_{48} H_{55} N_5 O_{17}$  adopted by Scherer and Lieb.g. It has been known, for some time, that by certain chemical manipulations, a substance may be obtained from protein, whose formula is  $C_{40} H_{51} N_5 O_8 + HO$ , and to which Mulder applied the term *oxy-protein*. This is the substance to which he has now given the more descriptive name of tritoxide of protein, without, however, intending to imply anything more than it contains three atoms more oxygen than protein. His recent investigations have elicited the following facts. When fibrin or albumen is boiled with water, in the course of about four hours, principles are always obtained which are soluble in water, whilst the greater part remains undissolved. On repeating the ebullition every four hours with fresh water, fresh soluble matter is extracted, the insoluble portion becoming poorer in carbon, hydrogen, and nitrogen, but richer in oxygen, until the composition is finally constant. Moreover, the portion of albumen or fibrin soluble in water, when evaporated, extracted with alcohol, and treated with cold water, is almost entirely soluble in it; and likewise contains less carbon, hydrogen, and nitrogen, but more oxygen than protein. The substances taken up by the alcohol are merely products of the decomposition of the soluble portion of the fibrin or albumen; and it is to them that we must attribute the ammonia produced on distilling albumen or fibrin with water. The soluble matter obtained in this way is, in every respect, identical with the tritoxide of protein, to which we have adverted; it exists, moreover, ready formed in the buffy coat of the blood, and may be obtained from

\* *Annalen der Chem. und Pharm.*, vol. 47, p. 300; and *Versuch einer allgemeinen physiologischen Chemie*, p. 317.

it by a short ebullition. The following are its principal characteristics :—It is soluble in cold water, but not in alcohol, ether, or any oils. It is perfectly neutral, and is reprecipitated, in the same manner from its aqueous solution, by dilute nitric, sulphuric, hydrochloric, neutral and basic phosphoric, and tannic acids; by solutions of chlorine, bichloride of mercury, neutral and basic acetate of lead, nitrate of silver, sulphate of zinc, and peroxide of iron. It forms with metallic oxides a class of double salts, composed according to the formula  $(C_{40}H_{31}N_5O_{15} + MO) + (C_{40}H_{31}N_5O_{15} + HO)$ . Tritoxide of protein is not precipitated by dilute acetic acid, neutral salts of potash and soda, chloride of barium, hydrochlorate of ammonia, nor by that very delicate test for protein, ferrocyanide of potassium. It dissolves gradually in solutions of potash, soda, and ammonia. When thoroughly dried, it forms an amber-coloured powder.

Let us now revert to the undissolved residue, which ultimately assumes a uniform composition, expressed by the formula  $C_{40}H_{31}N_5O_{14}$ . It is this which is first formed from protein by the influence of the oxygen of the atmosphere. The other substance (trioxide of protein) originates from it by the addition of another equivalent of oxygen. In this respect albumen and fibrin give different results. Albumen, without going through this preparatory change like fibrin, is at once converted into trioxide of protein by ebullition; the insoluble portion which remains being unaltered albumen. From its composition it has received the name of binoxide of protein. It exists ready formed in the buffy coat of the blood. Von Laer has obtained it from hair in the following manner :—the protein is first thrown down by the addition of a little acetic acid to a solution of hair in potash. On the addition of a larger proportion of free acid, after the removal of the protein, another substance, previously in a state of solution, is precipitated. This is binoxide of protein. Von Laer describes it as a bright yellow precipitate. After being carefully washed and dried, it appears as a black, glossy, resinous mass, which, on being pulverised, forms a dark, amber-yellow powder. It is insoluble in water, and alcohol, but dissolves perfectly in dilute acetic, hydrochloric, nitric, and sulphuric acids. Ferrocyanide of potassium precipitates it from its acid solutions. It is soluble in potash and ammonia.

In order to obtain these products of the oxidation of protein, by boiling fibrin in water, it is essentially necessary that there should be free access to the atmospheric air.

The products of the oxidation of protein occur constantly in the blood; they are formed in the lungs from fibrin, a substance which has been shown by Scherer to possess the property of absorbing oxygen, when in a moist state.

In inflammatory conditions, a considerably larger quantity of protein in an oxidised state is contained in the body than occurs in a normal condition of the system.

2. *Fibrin*. Zimmermann\* has made some experiments on the solubility of fibrin in saturated solutions of various salts; but as the fibrin was obtained from the buffy coat of the blood, which has been shown by Mulder's researches to consist of the binoxide and trioxide of protein, and which, probably, contains no true fibrin, it is unnecessary to state his results.

Wurtz finds in the products of the putrefaction of fibrin, exposed in summer for eight days to the air, albumen, carbonic acid, acetic acid, *butyric acid*, and ammonia. He infers from the occurrence of butyric acid, that fibrin, and perhaps other protein-compounds, may be transformed into the neutral fatty bodies, which are so closely connected with the volatile fatty acids.

3. *Albumen*. Wurtz has succeeded in removing from the albumen of white of egg all the inorganic matters, which have been supposed, by certain chemists, to be the cause of its solubility in water. Neither its solubility, nor any of its chemical characters, appeared in any degree affected.

Hoffmann† inserted a square inch of the mucous membrane of the duodenum of

\* Pharm. Centr. Blatt, 1843, p. 614; and the Annual Report, &c., by Berzelius. French Ed., 1846, p. 371.

† Ann. der Chem. und Pharm., vol. 46, p. 113.

a calf, into a vessel containing serum of the blood. In the course of eight days, (a temperature of about  $90^{\circ}$  being preserved,) a coagulum, occupying half the original volume of the serum, had formed; the supernatant fluid was no longer alkaline, did not coagulate on heating, had a gaseous odour, and was covered with a white film. From experiments made on the coagulum, he conceives that the albumen is converted in this experiment into casein and fibrin. The chemical proofs of such a change are, however, defective.

Hruschauer\* has published an elaborate essay, with the view of proving that albumen is an acid. The experiments have been repeated, and the conclusions denied, by Berzelius.

4. *Ammonia given off by Albuminous Fluids.* M. Turck† communicated a memoir to the Academy of Sciences on the chlorides occurring in albuminous fluids. All the albuminous liquids he has yet examined, viz., the saliva, serum of the blood, and white of eggs, are continually disengaging ammonia. He conceives that this gas is due to the simultaneous presence of muriate of ammonia and caustic soda in these fluids. The soda becomes converted into a muriate, and ammonia is then slowly liberated. In fresh albuminous liquids there is not the least taste of chloride of sodium; it is only in virtue of this reaction that this salt is progressively formed. While the soda is replacing the ammonia, a very singular phenomenon of crystallization is exhibited. Mr. Turck concludes by observing, that the evolution of ammonia from albuminous liquids performs an important part in the animal economy.

5. *Lactic Acid.* The existence of this acid and of its salts in the animal fluids is denied *in toto* by the Giessen school. Enderlin,‡ acting under the superintendence of Liebig, analysed the ash of the blood of man, the ox, the sheep, the calf, and the hare, the ash left by the incineration of the saliva and the feces of man, and the ash of the flesh of the ox. Although the occurrence of carbonates in the ash would be no proof of the existence of lactates, their absence is usually regarded decisive proof of their non-existence, since the lactates with fixed bases are converted, by a red heat, into carbonates.

According to Enderlin, the addition of an acid to the ash caused no effervescence; and in this manner, the non-existence of a carbonate in the ash, and consequently, as he supposes, of a lactate in the substance from which the ash was obtained, was demonstrated. Enderlin likewise endeavoured to obtain lactic acid in the form of lactate of zinc from the extractive matters of blood, but always without success, unless a little lactic acid had been previously added. Moreover, Liebig and Haidlen have disproved the existence of lactic acid in the urine and milk respectively.

Berzelius, upon whom Liebig charges the offence of first introducing lactic acid into the list of constituents of the human body, seems still unwilling to yield the point. In his report for the past year he observes, in relation to Enderlin's results, that "his experiments sufficiently prove that he has found no traces of lactic acid in the blood. It is possible, however, that others may be more fortunate.§

Pelouze,|| to whom, in connection with Gay-Lussac, we are indebted for a great part of our knowledge regarding lactic acid, seems by no means inclined to agree with Liebig and Enderlin in the exclusion of this acid from the constituents of the animal body. "Lactic acid," he observes, "is one of the most abundant substances in the animal economy and in vegetables, and it seems sometimes to perform an important part. It exists naturally in milk, and is abundantly formed during the spontaneous ascension of that fluid. MM. Bernard and Barreswil have just proved its existence in the gastric juice. It results from some observations of M. Gobley, not yet published, that it is also found in a free state in the white of egg. . . . I will add, without fear of contradiction, that

\* Annual Report, &c., by Berzelius, p. 848.

† Gazette Méd. de Paris, Feb 8th, 1845.

‡ Annal. der Chem. und Pharm., vol. 46, p. 164.

§ Report on the Progress, &c., French Edit., p. 378.

|| Journal de Pharmacie et de Chimie, Jan. 1845.

it is to be regretted that the numerous analyses which have been made of the organs and of the secretion of animals, have not always been preceded by a more profound examination of the constituent principles of these organs and of these secretions.\*

We have reason to believe that considerable light will be thrown upon this subject by some experiments that are being conducted at the present time.

## § II.—The Blood.

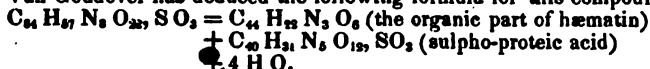
6. *Colour.* From some experiments recently made by Scherer,\* it appears, that when fresh red ox-blood is deprived of its fibrin, and diluted with twice or thrice its volume of water, it assumes a dark venous tint, which is not affected by the passage of a current of oxygen through it. On the addition, however, of a little milk, oil, finely powdered chalk or gypsum, the original bright red colour is evolved. These experiments seem to prove that the bright red colour is dependent on other causes than oxidation, and that the dark venous tint does not arise from carbonic acid or carbon. In fact, Scherer conceives that they prove that the former is dependent on the presence of white particles of chyle suspended in the fluid; an opinion confirmed by the microscope. It was observed by Hewson (as far back as the year 1775) that when the colour of the blood is bright red, the corpuscles are always biconcave; they reflect a large amount of light, and in this respect act as the chalk, &c., in Scherer's experiments. When, on the other hand, the blood is of a dark colour, the corpuscles are biconvex, and the capsule is so thin as to admit of the easy passage of the whole light through it. If the blood remain in contact with water till a dark tint becomes apparent, and a saturated solution of a neutral salt be then added, the corpuscles again become biconcave, in consequence of their being partially emptied by the endosmosis called into play by the different fluids within and without the capsule, and the original bright red colour re-appears. Mulder explains the difference between the colour of arterial and venous blood in the following manner:—Two oxides of protein are formed in the act of respiration; they have a strong plastic tendency, and solidify round each corpuscle, making the capsule thicker, and better qualified to reflect light. Each corpuscle of arterialised blood is thus, in reality, invested with a complete envelope of buffy-coat, which gradually contracts and forms the cupped or biconcave surfaces, which, as we have already shown, are favourable to the reflection of light. On reaching the capillaries, the oxidised protein is deposited, and is probably engaged in the process of secretion; while the corpuscles, losing their opaque investment and their cupped form, can no longer reflect light, and the blood assumes a venous tint.†

Mulder has recently proved that the elementary composition of hæmatin, the ordinary red colouring matter of the blood, is precisely identical, whether obtained from arterial or venous blood, and that it may be represented by the formula  $C_{44}H_{23}N_3O_6Fe$ . He has likewise found, that on passing a stream of chlorine gas through water containing hæmatin in suspension, the iron leaves the other elements and forms a chloride of iron; while the atom of iron thus removed is replaced by six atoms of chlorine, and a compound is formed which is represented by the formula  $C_{44}H_{23}N_3O_6 + 6ClO_2$ . During this process the red colouring matter is destroyed, and the new compound appears as a white flocculent precipitate. It must not, however, be assumed, from this experiment, that the red colouring matter is dependent on the iron; for that constituent may be removed from the hæmatin, without materially affecting its tint, as may be shown in the following manner:—Let some dried blood be mixed with concentrated sulphuric acid, and after standing for some days, let water be added. Hydrogen gas is evolved by the action of the acid on the dried blood, and sulphate of the protoxide of iron is formed. If the blood, after the process, be carefully washed, a mixture of alcohol and sulphuric acid will extract from it red hæmatin in combination with sulpho-proteic acid, but perfectly free from iron.

\* Quoted in Mulder's Versuch einer allgemeinen physiologischen Chemie, p. 351.

† See supra, p. 260.

Van Goudover has deduced the following formula for this compound.



Although this experiment affords conclusive evidence that the red colour of the hæmatin is not dependent on the iron, yet this metal is very firmly combined with the four organic elements of this constituent. Well prepared hæmatin may be submitted for several days to the action of dilute hydrochloric or sulphuric acid, without the iron diminishing in the slightest degree. Hæmatin treated in this manner, left, after incineration, 9.49% of peroxide of iron, the amount that is always yielded by well purified hæmatin.

### § III.—Respiration.

7. There are two rival theories respecting the manner in which oxygen is taken up by the blood, and conveyed to the peripheral system. Liebig maintains that this is effected solely by the iron in the corpuscles, while Mulder refers it entirely to the oxidation of protein-compounds. Liebig asserts that the corpuscles of arterial blood contain peroxide of iron; that, in their passage through the capillaries, they lose a portion of their oxygen, and combine with carbonic acid; so that, in the venous system, they no longer contain peroxide, but carbonate of the protoxide of iron. When they reach the lungs, an exchange takes place between the carbonic acid of the blood and the oxygen of the atmosphere. Mulder, on the other hand, denies that the blood corpuscles are conveyers of oxygen, and that iron is oxidised during respiration, as assumed by Liebig; and he founds his conclusions on the following grounds:—

a. The iron is so intimately connected with the other elements of hæmatin, that it cannot be removed even by long digestion of this constituent in dilute hydrochloric or sulphuric acid; consequently it is highly improbable that it should be oxidised in the lungs. Liebig, indeed, observes, that dilute acid removes iron from dried blood: but Mulder gets over this difficulty, by showing that other constituents of the blood, besides the colouring matter, contain this metal, apparently in an oxidised state.

β. If, as Liebig asserts, peroxide of iron exists in arterial, and carbonate of protoxide of iron in venous blood, almost any dilute acid would be capable of extracting the oxide; which we have shown not to be the case.

γ. Assuming, with Liebig, that the iron exists in arterial blood as a peroxide, the organic part of hæmatin would be different: instead of being  $\text{C}_{44} \text{H}_{77} \text{N}_5 \text{O}_6$ , it would be  $2 (\text{C}_{44} \text{H}_{77} \text{N}_5 \text{O}_6 \text{Fe}) - \text{Fe}_2 \text{O}_3$ , or  $2 (\text{C}_{44} \text{H}_{77} \text{N}_5 \text{O}_{11})$ .

δ. The probability of the existence of the iron in a metallic state is very strong.

ε. The amount of hæmatin in the whole mass of the blood is far too inconsiderable to carry a due supply of oxygen to the whole system.

8. *Expiration of Carbonic Acid in Disease.* Macgregor ascertained that the air expired by persons ill of confluent small-pox contained as much as 8% of carbonic acid. During the eruptive fever of measles, it amounted to from 4 to 5%; and in proportion as the health was restored, the per centage was diminished to its natural standard. In chronic skin diseases an augmentation was likewise observed; and in a case of ichthyosis the mean per centage was 7.2. In typhus, according to Dr. Malcolm,\* the formation of carbonic acid is diminished. In diabetes, no deviation from the normal standard could be detected. The question of the quantity of carbonic acid expired by a person in twenty-four hours, has lately become of peculiar interest, in consequence of its association with several problems of high physiological importance. Liebig has endeavoured, indirectly, to estimate the quantity, by comparing the amount of carbon contained in the food consumed in the twenty-four hours, with the carbon of the excretions during the same period, and estimating the difference as the quantity separated by the respiratory process. He thus found that an adult, taking moderate exercise, expires daily, on an average, 1.39 ounces of carbon

\* London and Edinburgh Monthly Journal of Medical Science, 1843, p. 1.

(more than double the quantity found by Lavoisier.) Experiments have recently been made by Andral and Gavarret, Scharling, and Brunner and Valentin, with the view of ascertaining this point, and of elucidating the chemical bearings of this department of physiology. We shall endeavour to give, as briefly as possible, their most important results.

9. *Absolute Quantity of expired Carbonic Acid.* Andral and Gavarret expressed their results per hour. They are contained in the following table:—

## MALE SEX.

Carbon exhaled per Hour.			Carbon exhaled per Hour.		
Age.	Muscular Development.	Grains.	Age.	Muscular Development.	Grains.
8.	Moderate .....	77.0	37.	Moderate .....	164.7
10.	Very great .....	104.7	40.	Very great .....	186.3
12.	Moderate .....	113.9	45.	Very slight [mean of 4] ..	132.4
12.	Great .....	127.8	48.	Good .....	161.7
14.	Moderate .....	126.2	50.	Good .....	164.7
16½.	Good .....	157.0	54.	Very great .....	163.2
18.	Good .....	169.4	59.	Moderate .....	154.0
20.	Good .....	166.3	60.	Extraordinarily great .....	209.4
24.	Moderate (mean of 2) ....	176.6	63.	Extraordinarily great .....	190.9
26.	Extraordinarily great {	217.1	64.	Slight .....	133.9
		217.1	68.	Moderate .....	147.8
26.	Moderate .....	169.4	76.	Slight .....	92.4
28.	Good .....	190.9	92.	Extraordinarily great ....	135.5
32.	Good .....	176.6	102.	Extremely diminished ....	90.8
33.	Moderate (mean of 6) ....	164.7			

## FEMALE SEX.

Muscular Development.		Carbon exhaled per Hour.		Muscular Development.		Carbon exhaled per Hour.	
Periods of Life.	Age.		Grains.	Periods of Life.	Age.		Grains.
Prior to the appearance of the catamenia.	10.	Good .....	92.4	After cessation of catamenia.	38.	Moderate..	120.3
	11.	Good .....	95.4		42.	Good ....	127.8
	13.	Great .....	97.0		44.	Very great	152.4
	15½.	Very great..	109.3		49.	Moderate..	113.9
During menstrual life.	15½.	Moderate ..	97.0		52.	Moderate ..	115.5
	19.	Very great	107.8		56.	Moderate ..	119.3
	22.	Good .....	103.1		63.	Moderate ..	106.2
	26.	Slight ....	92.4		66.	Moderate ..	104.7
	26.	Moderate ..	97.0	76.	Very great	101.4	
	32.	Moderate ..	95.4	82.	Moderate ..	92.4	
	45.	Moderate ..	95.4	3 mo. pregnant.	42.	Good ....	120.3
			5 mo. ditto.	32.	Good ....	126.7	
			7½mo. ditto.	18.	Slight ....	112.4	
			8½mo. ditto.	23.	Good ....	129.3	

It is thus seen that, in general, the amount of carbonic acid expired by both sexes increases with age up to a certain point, the 40—45 year, and then diminishes; that the quantity of carbonic acid expired increases with the development of the muscular system; that women expire less carbonic acid than men; that the formation of carbonic acid attains its maximum at the commencement of menstruation, and then experiences no further increase, except in the pregnant state, until the cessation of menstruation, when an increase again takes place. On an average, an adult male, of moderate constitution, exhales from 160 to 170 grains of carbon per hour; an adult female, in the unimpregnated state, from 100 to 110 grains; during pregnancy, 125 grains; and after menstruation has ceased, from 116 to 130 grains. Dumas also found 154 grains per hour as the average quantity of carbon exhaled by an adult male. Scharling's experiments were made on the following individuals:—1st, a male, *et. thirty-five*, weighing 131 lbs.; 2nd, a

male, *æt.* sixteen, weighing 115½ lbs. ; 3rd, a soldier, *æt.* twenty-eight, weighing 164 lbs. ; 4th, a girl, *æt.* nineteen, weighing 111 lbs. ; 5th, a boy, *æt.* nine and three quarters, weighing 44 lbs. ; and, 6th, a girl, *æt.* ten, weighing 46 lbs. The carbon exhaled per hour amounted to—

No. of the person.	Amount of Carbon. Grains.	Remarks.
1. In June, when very hot.	145	Fasting
	190	After breakfast and a walk.
	130	Hungry.
	165	2 hours after dinner.
	160	After tea.
	100	Whilst asleep.
2. In June, when very hot.	114	Sleepy.
	144.2	Fasting.
	139.8	Fasting and hungry.
	177	Half an hour after breakfast.
	167.7	2½ hours after breakfast.
	180.8	2 hours after dinner.
3. In October.	137.8	Asleep.
	111.9	Fasting.
	159.4	Fasting after breakfast and work.
	188.9	After dinner.
	194.7	3 hours after dinner.
	178.3	After work.
	122.3	Whilst asleep.
4. In October.	98.9	Whilst eating.
	91.3	Fasting.
	92.6	After supper.
	133.8	1 hour after breakfast.
	117.0	1 hour after dinner.
	106.9	Whilst eating.
5. In Autumn.	76.2	Fasting.
	94.8	Whilst at breakfast.
	113.8	After breakfast.
	119.3	1 hour after dinner.
	84.5	2 hours after supper.
	74.8	Whilst sleepy.
6. In Autumn.	65.5	Whilst asleep.
	95.3	After breakfast.
	103.0	After dinner.
	99.0	Shortly after tea.
	75.1	Whilst asleep.

Supposing that adults sleep seven, and children nine hours per day, the amount of carbon consumed is, on an average—

In 24 hours.	In one hour.	In 24 hours.	In one hour.
1. 3380 grains.	141 grains.	4. 2555 grains.	106 grains.
2. 3455 "	144 "	5. 2050 "	86 "
3. 3692 "	154 "	6. 1938 "	80 "

It is thus evident that the quantity of carbonic acid expired is very variable, and that it may be altered by many circumstances. Hunger and rest diminish,



satiety and labour increase it. It is greater during the day than the night, in the proportion of 1·237 to 1. If the expired carbonic acid be estimated in relation to the weight of the body, it is found that children give off a proportionally greater amount of this gas than adults. In some forms of disease, the amount of expired carbonic acid falls below the standard; it seems, in a state of health, to vary directly with the activity of the circulation. The influence of muscular activity on the amount of carbon consumed, has been clearly shown by some experiments made by Dr. Hoffmann, during a pedestrian tour. His diet was simple and scanty; he took no drink, walked during the whole day, weighed all his food and every excretion that could be weighed, (even the nasal mucus,) as well as himself: he then found that the weight lost by the body was never equalled by the excess of the excrements over the food, and that there was a constant loss of matter by the skin and lungs, which amounted to more than 1 lb. We must pass over the details of his experiments. Brunner and Valentin found that the weight of carbon they consumed per hour varied from 134 to 170 grains, and averaged 160. The volume of expired carbonic acid per hour, on an average, was equal to 21·8 litres,\* and the entire volume of the air expired per hour, on an average, equal to 540 litres. These results agree well with those of the earlier observers. When the corrections for moisture are made, the quantity of carbon expired per hour is equal on an average to 172 grains, and of carbonic acid to 23·5 litres.

10. *Relations of the Constituents of the expired Air to the Theory of Respiration.* On this point Brunner and Valentin only have experimented. They found—

Individual.	No. of Experiments.	Volume per Cent.			Volume per Cent. in relation to the Atmosphere.		
		CO <sub>2</sub> .	O.	N.	Disappeared O.	Difference of N.	
Brunner	12 Exp. 1st series	4·356	16·007	79·547	4·720	+	0·362
	4 Exp. 2nd "	3·825	16·306	79·869	4·508	+	0·683
Thomas	4 Exp. 1st "	4·673	15·895	79·432	4·920	+	0·329
	2 Exp. 1st "	4·316	16·143	79·541	4·671	+	0·356
Valentin	12 Exp. 2nd "	4·641	15·783	79·576	5·032	+	0·391
	Total average	4·380	16·033	79·587	4·783	+	0·402

Individual.	No. of Experiments.	Volume per Cent.			Volume per Cent. in relation to the Atmosphere.		
		CO <sub>2</sub> .	O.	N.	Disappeared O.	Difference.	
Brunner	12 Exp. 1st series	6·522	17·428	76·050	5·582	—	0·940
	4 Exp. 2nd "	5·749	17·735	76·516	5·275	—	0·474
Thomas	4 Exp. 1st "	6·975	17·165	75·860	5·845	—	1·130
	2 Exp. 1st "	6·454	17·481	76·061	5·590	—	0·929
Valentin	12 Exp. 2nd "	6·945	17·089	75·965	5·920	—	1·025
	Total average	5·546	17·373	76·081	5·637	—	0·909

It is evident that the variations observed in the amount of nitrogen are entirely within the errors of observation, and the nitrogen may be disregarded in the process. Again, the expired air contains a volume of carbonic acid, which is but little less than the volume of oxygen which has disappeared, (therefore the weight per cent. of the carbonic acid is necessarily somewhat greater than that of the absorbed oxygen, and thus also the difference of nitrogen appears positive as regards volume, but negative as regards weight;) so that all the oxygen absorbed reappears as carbonic acid, except a small quantity consumed in the body for other purposes. Now, according to Graham's law of the diffusion of gases, when they are separated by an animal membrane and are under equal pressure, they become mixed inversely as the square roots of their densities; consequently, 1·17585 volume of oxygen is absorbed for 1 volume of expired carbonic acid. Comparison of the figures obtained for the carbonic acid, and absorbed oxygen,

\* The litre is a little larger than the English wine quart.

almost exactly agreed with those reckoned according to the laws of the diffusion of gases.

Volume of the expired Air.			Oxygen absorbed.	Carbonic Acid calculated.		Difference.
CO <sub>2</sub> .	O.	N.				
3.850	16.270	79.185	4.690	3.994	+	0.144 per cent.
3.593	16.034	79.185	4.931	4.199	+	0.606 "
3.949	16.090	79.185	4.887	4.162	+	0.213 "
3.777	16.090	79.185	4.914	4.192	+	0.415 "
3.759	16.095	79.185	4.922	4.192	+	0.433 "
4.483	15.328	79.185	5.698	4.853	+	0.370 "
4.752	14.733	79.185	6.362	5.418	+	0.660 "
4.588	14.853	79.185	6.253	5.325	+	0.737 "

In respiration, which is thus a purely mechanical process, the inspired air is first warmed to 99.5°, and saturated with moisture at this temperature, which is rapidly accomplished on account of its extensive distribution. It then experiences a simple diffusion; the nitrogen remains entirely unaffected; 1.1742 volume of oxygen is absorbed, and replaced by 1 volume of carbonic acid which is expired; or, for each volume of oxygen absorbed, .8516 volume of carbonic acid appears. In consequence of the accuracy with which the law of diffusion is here observed, the most minute portion only of other gases is absorbed or expired. That hydrogen, carburetted hydrogen, and carbonic oxide gases are not contained in the expired air, the authors have shown by some direct experiments; but small quantities of organic matters are evolved during respiration, as is shown by sulphuric acid, through which expired air has been made to pass, being always coloured red\*.

11. *On Respiration. By Magnus.*† At the sitting of the Royal Academy of Berlin, June 17, 1844, Magnus communicated some remarks on respiration. A short time back, Gay-Lussac submitted‡ to the Academy of Sciences at Paris, a critical review of a work on the gases contained in the blood, viz., oxygen, hydrogen, and nitrogen, published by Magnus seven years ago. According to this review, which however contains no new experiments, the theory of the function of respiration established as the result of that work would be destitute of any experimental basis; and must be considered as a mere speculation, or as derived from experiments which are rather calculated to prove the reverse of the inferences deduced from them.

The various theories relative to respiration may be comprised under the following heads:—

1. The older theory of Lavoisier, that the inspired oxygen combines in the lungs with a portion of the carbon of the blood, and escapes as carbonic acid with the air expired.

2. Theories according to which the inspired oxygen produces in the lungs new combinations, which, afterwards uniting in the capillary vessels only with carbon and nitrogen, are converted into other combinations, and return with the venous blood to the lungs; where, on the accession of oxygen, they are decomposed, and separated as water and carbonic acid. In these theories, which, in opposition to the following, may be called the *chemical* ones, the separation of the carbonic acid and real oxidising process invariably takes place in the lungs; and in this they differ from the following, which may be called the *theories of absorption*.

3. The theory by which it is maintained that the inhaled oxygen is merely absorbed by the blood, and conveyed to the capillary vessels, in which it is employed to oxidise certain substances, converting them into carbonic acid and water, which are received by the blood, and return with it to the lungs, where, coming in contact with the air of the atmosphere, they are excreted; after which a fresh

\* For further information on this subject, the reader is referred to Valentin's *Lehrbuch der Physiologie*, vol. I. pp. 507—508; or to an excellent abstract that appeared in *The Chemical Gazette*.

† *The Chemist*, Feb. 1846.

‡ *Comptes Rendus*, vol. xviii., p. 646; and *The Chemist*, June, 1844.

quantity of oxygen is absorbed, which undergoes the same changes. In addition to these, as a fourth theory may be considered—

4. The oxygen enters into chemical combination with the blood in the lungs, which is decomposed in the capillary vessels, there producing water and carbonic acid. These bodies are received by the blood, without, however, forming with it a chemical combination, and are removed in the lungs on coming into contact with air.

After having shown in the above-mentioned work,\* that, on passing hydrogen, nitrogen, or atmospheric air through venous blood, carbonic acid is disengaged, the quantity of the latter body remaining the same, whatever kind of gas was employed for that purpose, and that *in vacuo*, on sufficient rarefaction from the same liquid, carbonic acid is likewise obtained, and that, consequently, venous blood contains carbonic acid in a real state of absorption, an assertion which, a short time before, was controverted; it seemed probable that the function of respiration takes place according to one of the theories of absorption.

To establish this assertion, it is not sufficient to prove that carbonic acid is present in both venous and arterial blood, and that oxygen and nitrogen are found in both; because the blood might contain all the three gases merely in a state of absorption, without their participating in the act of respiration. But if this be the case, the arterial blood should contain as much oxygen, and this body be therein in the same proportion with reference to the carbonic acid, as occurs in venous blood. This circumstance serves a means for examining whether or not the absorbed gases really act any part in the function of respiration. If, therefore, to show that in arterial blood the carbonic acid is displaced by an equal volume of oxygen be still a desideratum, still the proofs given that the proportion of oxygen, relative to carbonic acid, is greater in arterial than in venous blood, fully warrant the conclusion that the respiration is, at least to a certain extent, based on absorption. This alone was the object of that work. Of this manner of arguing, however, Gay-Lussac makes no mention whatever. He re-calculates the results of the experiments, and reduces the quantities of gases obtained to the same volume of blood; though, throughout the description of these experiments, it appears that the quantity of air separated from the blood was at one time greater, and at another less; and after having communicated those experiments, it was expressly stated (page 600,) "that the circumstance that the quantities of air obtained in the several experiments are not entirely concordant, is to be attributed to the circumstance that the above-described access given to air by means of a tube screwed on, could not be repeated in all experiments in a like number of times, because the period during which the froth was settling likewise varied."

Gay-Lussac observes, that it is against his arguments that only the tenth part of the carbonic acid was subtracted from the blood. "But," he continues, "it is, notwithstanding, to be supposed that the fractional quantities of carbonic acid obtained by Magnus, are proportional to the whole amount of it contained in the various kinds of blood. It must be well remarked, that on this ground the whole conclusion is based. It would be true, on the supposition that the air was always under the same circumstances subtracted from the blood; but, from the passage quoted above, it appears that this could not be done. The following was the mode of operating:—A vacuum was produced over the blood, the gases filling it passed into another vessel; and, the vacuum thus again restored, the same process was repeated as many times as, on account of the froth remaining on the blood, could be managed. The circumstances, therefore, under which the gases were subtracted from the blood were certainly not always the same. In addition to this, it appears by a simple calculation that, on separating from a liquid several gases absorbed by it, their relative amount in the first portions differs from that occurring in the subsequent ones: a fact of which no one is better aware than Gay-Lussac, he having proved it by experiments mentioned by himself in the very review in question, on the quantities of oxygen and nitrogen absorbed by

\* Poggendorff's *Annalen*, xi. 533.

water, when exposed to the atmospheric air, instituted by himself, in common with M. de Humboldt; and though in those experiments the gases were removed by boiling, it is yet evident that by this operation nothing else happens than that the pressure under which they exist is removed.\*

We cannot conceive, therefore, how Gay-Lussac could maintain that the quantities of carbonic acid obtained in the single experiments should always be proportionate to its whole amount occurring in the blood; it having consisted sometimes of six, but generally of from ten to twelve proportions yielded to the vacuum.

But if this proportion does not exist, the principal argument of the whole critical review falls to the ground. For to reduce the quantities of the gases obtained to an equal volume of blood, is then incomprehensible.

Gay-Lussac, moreover, takes a mean from the experiments calculated in that manner. It is, however, not judicious to proceed thus; for the blood of the same animal varies at different times, especially if venesection has been performed some days previously, and this is still more the case when various animals are employed in the experiments; but, besides these, if, in experimenting with venous blood, some animals furnished blood contained a less amount of air than others did, the sums of gas of all the experiments with venous blood, relative to the blood employed, will be less than that of the experiments with the arterial blood. But it is clear, that a smaller quantity of air withdrawn must contain less carbonic acid than a larger one. According to Gay-Lussac, the whole quantity of the arterial blood employed in his experiments drawn from various individuals, of calves and horses, amounts to 608 cubic centimetres; and the gas separated from it to 63·4 cub. centim., or 10·43 per cent. of the blood: whereas the sum of the venous blood amounts to 8·63 cub. centim., from which 66·3 cub. centim., or only 7·68 per cent., were separated. It is not surprising that, in calculating the amount of carbonic acid, according to these numbers, more of it is found in arterial than in venous blood. But this result is merely accidental; for it might have happened that much more or much less air might have been separated from the venous blood. The conclusion, therefore, that it appears from these experiments that less carbonic acid is contained in venous than in arterial blood, is erroneous, because the experiments were neither meant to prove, nor could they prove, in what ratio the gases stand with reference to the blood; but it was merely stated, that in arterial blood the proportion of oxygen, relative to carbonic acid, was greater than in venous blood. And this they indeed show; for on considering the sums of the experiments, according to the very calculation of Gay-Lussac, we find,

	Arterial Blood.		Venous Blood.	
Carbonic acid	39·5	or 62·3 per cent.	47·5	or 71·6 per cent.
Oxygen	14·7	" 23·2 "	10·1	" 15·3 "
Nitrogen	9·2	" 14·5 "	8·7	" 13·1 "
	63·4	100·0	66·3	100·0

That M. Gay-Lussac did not mention this result is the more striking, it having been expressly stated in the treatise (page 600.) "From this table it appears that the ratio of oxygen, with reference to the carbonic acid, is greater in arterial than in venous blood."

After having shown the real bearing of the proportion on which the whole critical review of Gay-Lussac is chiefly based, we must not leave unnoticed the other remarks contained therein. In the treatise quoted, it was proved, so far as it could be done by the data obtained, that the carbonic acid absorbed by the

\* These gentlemen, having disengaged, by boiling, the air from water of the Seine, and collected it in fractioned portions, found it to be of the following composition:—

First portion, 23·7 oxygen, 76·8 nitrogen. | Third portion, 30·2 oxygen, 69·8 nitrogen.  
Second " 27·4 " 72·6 " | Fourth " 32·5 " 67·5 "

—*Journal de Physique, par Delaméthérie*; and *Gilbert's Annalen*, xx. 133.

blood is sufficient to yield the whole quantity of the carbonic acid expired by an adult person. Gay-Lussac, however, goes beyond this; based on the suppositions there made, (though they might have been too high by double their given amount,) he calculates how much oxygen is absorbed by the arterial blood. He is of opinion that this blood must contain not only a volume of oxygen equal to that of the carbonic acid expired, for the production of which it was employed; but, in addition to this, one-third more of oxygen, to generate the water expired: from which it would follow, that one-third more of oxygen is invariably inspired than carbonic is expired. This, however, is opposed to all experiments on respiration.

The circumstance that the substances secreted in the capillary vessels need not to consist merely of carbon and hydrogen, but may likewise contain oxygen, has evidently been lost sight of. The composition of expired and inspired air positively shows that these substances still contain a sufficient quantity of oxygen to form water with the hydrogen, if this liquid was not already separated as such in the capillary vessels.

In a second calculation based on various suppositions, Gay-Lussac arrives at the conclusion, that in the act of respiration the venous blood gives up 13 per cent. of its volume of carbonic acid; and that, to effect this, 17 per cent. of it must be contained therein. He, however, says, "This (the 17 per cent.) is the minimum of carbonic acid which venous blood should contain; and, as arterial blood also contains it, this minimum would be the difference of the quantities of carbonic acid contained in each blood."

It is inconceivable how this could have been asserted, it having been stated just now that the difference of the carbonic acid of the two kinds of blood amounts as a minimum to 13 per cent., in consequence of which, in arterial blood four per cent. would remain as a minimum. By the first calculation, Gay-Lussac obtained the result, that arterial blood, on coming into contact with atmospheric air, may absorb 22.45 per cent. of oxygen in volume, or 24.2 times more than pure water absorbs under similar circumstances. This solubility of oxygen in blood, says Gay-Lussac, is not impossible; but it ought to have been proved, or at least made probable. This reproach, not considering the stated error, is well-founded, and the author is at present occupied with instituting fresh experiments on that score; but, in case these do not happen to corroborate the numbers calculated by Gay-Lussac, they will not lessen the validity of the argument, that carbonic acid absorbed in blood acts a part in the respiration.

In concluding his review, Gay-Lussac disproves that the change of colour in the venous blood was for the greatest part accounted for by the loss of carbonic acid occurring in the lungs. He cannot admit these views, he says, for two reasons. The first is, that it had not been demonstrated that venous blood yields carbonic acid to the lungs; and yet, as was before shown, this is proved by the very fact that the ratio of carbonic acid, in reference to oxygen, is greater in venous than in arterial blood. The second reason is that, even granting that carbonic acid is yielded to the lungs, yet a large portion of it remains in arterial blood; and we are not warranted in explaining this very remarkable change of colour by the difference. But in this respect nobody is more convinced than the author himself; for, after having stated in his treatise that the blood, on yielding carbonic acid, becomes lighter, he says (p. 603,) "On the removal of the carbonic acid, however, venous blood never became of so light a red as arterial blood; but it seems that the absorption of various kinds of gases is likewise productive of various changes of colour. It is probable, therefore, that the red colour of arterial blood depends not only on the want of carbonic acid, but also on the absorption of oxygen."

At that time, the investigations of Peligot on the action of protoxide of nitrogen on the salts of protoxide of iron, by which the assertion that liquids, by merely absorbing, may entirely change their colour, was fully established, were not yet known. We cannot conceive why Gay-Lussac overlooks this view of the change of colour; confining himself to observing, that the author noticed that venous

blood becomes lighter by giving up carbonic acid, and considered this as a co-operating means for the production of the change of colour.

From these remarks it appears—

I. That the proportion supposed by Gay-Lussac to exist between the portions of carbonic acid, and resulting in the experiments instituted, and the whole amount of these gases obtained in the different kinds of blood, does not take place, and that therefore the result derived by Gay-Lussac from that circumstance is inadmissible.

II. That from these experiments it evidently appears, that the absorbed carbonic acid acts a part in respiration; because they show that the ratio of carbonic acid to oxygen is greater in venous than in arterial blood.

III. That the calculations made by Gay-Lussac, relative to the amount of carbonic acid and oxygen existing in blood, cannot be considered as correct.

In conclusion it must be mentioned, that immediately after the communication of the said critical review, M. Magendie laid before the Academy the results of an experiment instituted by himself, which serves as a new corroborating proof of the author's views on respiration, for it shows that the carbonic acid absorbed relative to the blood is greater in venous than in arterial blood, being in the former 78 per cent., and in the latter 66 per cent.

12. *On the Respiration of Frogs.\** By Professor F. R. Marchand. The experiments of the author were performed in a manner which removes all objections; and, moreover, so that in estimating the normal proportions the animals were surrounded by an atmosphere which was constantly changed. From them we learn in general that more oxygen is constantly absorbed than is necessary for the production of the exhaled carbonic acid, and that water is certainly formed. The experiments take account, not only of the matters exhaled from the lungs, but also from the skin. How much, however, of the phenomena is dependent upon the latter, cannot be determined for the present. As regards the loss of nitrogen, which Boussingault ascertained indirectly, in no case is it pure gaseous nitrogen, since, as the author satisfactorily ascertained, ammonia is exhaled from both the skin and lungs; nor is it at all probable that pure nitrogen is evolved. If this happens, the consumed amount of oxygen will appear too high, but at the most the error is very small. Besides ammonia, organic carbo-hydrogens are evolved from the lungs; for when the expired air is perfectly freed from water and carbonic acid, and then burnt with oxide of copper, a little carbonic acid and water are constantly obtained. In Marchand's experiments these matters were condensed in sulphuric acid; their very minute quantity is certainly contained in the exhaled watery vapour.

13. *Normal Respiration of the Animals.* To render the results, which are merely enumerated further on, more intelligible, we have copiously detailed the first experiment in the table containing the results of all the experiments.

Four large animals, which were caught on the 9th of July, and were very lively, were placed in the cylinder on the 11th of June, and left therein for fifty-two hours. Notwithstanding they had been well dried, the cylinder was almost immediately moistened with condensed aqueous vapour, and at the end of the experiment a large quantity of moisture had collected in the cylinder. The animals did not lose any of their liveliness during the whole experiment. At the commencement of the experiment, the apparatus with the animals weighed 993 200 + 284 887 grammes; after the experiment, with the enclosed excrements and liquids, 993 200 + 283 382 grammes. The apparatus had thus lost 1 505 grammes in weight. This loss must consist of vaporised water and expired carbonic acid, or rather of their elements, given off by the animals. The chloride of calcium and sulphuric acid tubes had gained in weight 1 312 gramme (from evaporated water;) the potash apparatus 2 151 grammes, consisting of carbonic acid. If the matters thus removed be added to the weight of the animals after the experiments, there must be an excess above the original weight of the ani-

\* Chemical Gazette, April 1, 1845.

mals, which, if we consider the nitrogen in normal respiration as perfectly indifferent, must consist of absorbed oxygen.

		Grammes.
		283.383
		1.313
		2.151
	Total	286.845
Weight of the animals before the experiment	-	284.887
Absorbed oxygen	-	1.958

The expired carbonic acid, 2.151 grammes, contains .587 gramme of carbon and 1.564 of oxygen. Thus 394 gramme more of oxygen is absorbed than was required for producing the exhaled carbonic acid. The oxygen was probably used in the formation of water; this is rendered more probable by Boussingault's experiments on the nutrition of turtle-doves, in which the whole of the hydrogen of the food was not found in the excrements :—

Number of the Frogs.	Their Weight before the Experiment.	Loss during the Experiment.	Expired carbonic Acid.	Carbonic contained therein.	Evaporated Water.	Absorbed Oxygen.	Oxygen contained in the Carbonic Acid.	Oxygen contained in the Water.	Duration of the Experiment in Hours.
4	234.887	1.505	2.151	.587	1.312	1.958	1.564	.394	53
6	449.120	1.230	2.113	.576	.965	1.875	1.586	.331	24
4	466.765	.750	1.007	.275	.672	.929	.732	.197	24
7	519.665	.730	1.492	.407	.663	1.330	1.085	.235	26
7	543.742	.833	1.599	.437	.690	1.401	1.163	.238	24
5	325.411	1.021	1.044	.235	.984	.937	.759	.223	42
5	306.225	2.353	3.373	.920	1.876	2.886	2.453	.443	44

From a survey of these experiments it is seen that a much larger quantity of oxygen is absorbed than is necessary to form carbonic acid. The author observed the same in an experiment on a rabbit, which was performed with an exactly similar apparatus, except that the cylinder was exchanged for a larger one. The animal was in good condition, and confined in the apparatus for eight hours. It had passed but a small quantity of urine (9.162 grammes):

Weight of the animal before the experiment	Grammes.
Weight of the animal after the experiment	777.103
	776.683
Loss	.420
Expired carbonic acid	8.246
Evaporated water	.351
Absorbed oxygen	3.237
Oxygen in the carbonic acid	6.433
Consequently there had served for the oxygenation of the hydrogen	1.334

14. *On the Influence of the Time of the Day on the Respiration.* Prout has shown that the quantity of carbonic acid expired varies at different periods of the day. Marchand confined his experiments to ascertain whether the respiration of these animals was diminished during the night. The animals were put into the apparatus soon after being caught. They weighed 5253.52 grammes, and were seven in number. The experiment lasted from 9½ o'clock in the morning

until the same time in the evening. The carbonic acid expired during this time amounted to .570 gramme—.155 gramme of carbon. .507 gramme of oxygen was absorbed, of which .415 gramme was in the carbonic acid, and .092 gramme in the water. The proportion of the absorbed oxygen to the carbon consumed was as 3.27 : 100.

The animals were left in the apparatus, and the experiment concluded in twelve hours. During the night they had produced only .435 gramme of carbonic acid = .119 gramme of carbon; .407 gramme of oxygen was absorbed, of which .316 gramme was required for forming carbonic acid, and .091 water. The absorbed oxygen was in the proportion of 3.42 : 100 to the consumed carbon. It is very remarkable that the amount of oxygen required for the formation of water remained the same both by day and night, whilst that for the production of carbonic acid was so essentially altered.

In another experiment, four frogs of 273.745 grammes weight, from 9½ in the morning to the same time in the evening, expired .230 gramme of carbonic acid = .063 carbon. They absorbed altogether .178 gramme of oxygen: .167 for the formation of carbonic acid, and .011 for the production of water. During the next twelve hours of the night .125 gramme of carbonic acid (= .034 carbon) only was expelled, .084 gramme of oxygen was absorbed, whilst the carbonic acid produced ought to have required .091 gramme of oxygen. The animals had become very weak from the continued fasting.

15. *Influence of Temperature on the Respiration.* The influence which the temperature of the surrounding air exercises on the respiration was examined, by supporting the cylinder on blocks of wood in another cylinder which was higher and broader, and which was filled with water of different temperatures, which were thus at the same time communicated to the inner cylinder. The thermometer indicated the constant temperature of the confined atmosphere. To regulate the temperature of the surrounding water, it was arranged so that it might flow over the top, whilst fresh water ran from a reservoir standing above, through a long funnel to the bottom of a vessel, whence it forced its way from below upwards. When water colder than the atmosphere was used, the arrangements were reversed. The water flowed out near the bottom, entering from above:—

Weight of the Frogs.	Temperature.	Time and Duration of the Experiment.	Expired Carbonic Acid.	Carbon obtained therein.	Absorbed Oxygen.	Oxygen in the Carbonic Acid.	Oxygen in the Water.
	<i>Fahr.</i>	<i>o'clock.</i>					
436.251	85-87°	8-2	.102	.0278	.0600	.0742	.0058
436.051	43-45°	8-9	.325	.0386	.3190	.2364	.0326
430.125	68-67°	9-12	.306	.0835	.2880	.2225	.0635
428.800*	64-66°	4-10	.239	.0790	.2630	.2100	.0530
428.705	82-86°	9-3	.201	.0546	.1570	.1464	.0106

It is seen from this table that in these animals the respiration was most active at a tolerably low temperature, 44-57°, and that an alteration of 43-45° had but little effect. When the temperature fell nearly to the freezing point, the respiration was much diminished; it approached nearly to the combustion of pure carbon. The same occurred at a tolerably high temperature, 82-86°, at which the animals become much weakened.

16. *Respiration in Pure Oxygen.* From his experiments on respiration in

\* The animals had diminished in weight from the separation of excrements.



pure oxygen, Marchand found that the quantity of carbonic acid was almost unaltered, while the quantity of absorbed oxygen was much increased; consequently a much more considerable oxidation of hydrogen must have resulted from the action of the oxygen: in fact, twice as much hydrogen was oxidised as when atmospheric air was used. Nitrogen must necessarily have been exhaled in the respiration of oxygen, as was observed by the older chemists, since this gas which is contained in the blood must have been separated in consequence of the power of diffusion of the inspired oxygen.

The paper concludes with a detail of numerous experiments on the effects of respiration in pure hydrogen, in a vacuum, in a confined atmosphere, and, finally, on the respiration of the animals while fasting. During continual fasting they always absorbed less hydrogen, and exhaled less carbonic acid.

17. *Vierordt on the Effect of increased Respiration on the Amount of expired Carbonic Acid* \*

The following are the conclusions at which the author has arrived, from a numerous series of experiments:—

1. The frequency of the respiration exerts a marked and very appreciable effect on the amount of expired carbonic acid.

2. The expired air is, *ceteris paribus*, poorest in carbonic acid when the respiration is most frequent, and richest in carbonic acid when the respiration is slowest. This is a confirmation of the physiological law that the secretions and excretions are the most saturated when they are the least copious.

3. The influence of the frequency of respiration on the amount of expired air is most easily seen when the respiration is very slow.

4. At every respiration, whatever be its length, there is a constant amount of carbonic acid evolved, amounting to 2.5%, to which there must be added a new amount of carbonic acid, varying directly with the length of the respiration.

5. The amount of carbonic acid produced during a given time, while the respiration is frequent, is, on the other hand, much larger than when the respiration is slow.

6. The number of inspirations affords the best medium of judging of the amount of excreted carbonic acid, as the number of respirations and the amount of carbonic acid generally increase in the same proportion.

7. The absolute quantity of carbonic acid produced during perfectly tranquil respiration, is to the amount during the most rapid respiration, in the proportion of 1 : 8.

● During normal respiration, about 6% of the carbonic acid circulating in the capillaries of the heart are excreted.

18. *On the Influence of Extreme Atmospheric Temperatures on the Amount of Carbonic Acid developed by Warm-blooded Animals.* M. Letellier has published some excellent observations on this subject. The low temperatures to which the animals were submitted varied from 23° to 37.4°; the high temperatures from 82.4° to 109.6°. The latter degree was never exceeded, as death rapidly supervened at that temperature, and sometimes even when the temperature was below 104°. The natural temperature of the body seemed to be the highest at which the animals on which he experimented could arrive. On reaching it, their danger became imminent—on exceeding it, death occurred instantaneously. These results caused some surprise, as being apparently contradictory to facts observed in relation to man. But if we consider the greater susceptibility of the respiratory functions in the animals experimented on, and likewise their comparatively diminutive size, which allows the heat to penetrate rapidly to the centre of vitality, we may in a considerable degree reconcile the apparent discrepancy. At a more moderate temperature, as from 82.4° to 91° 4, the animals often preserve throughout the experiment a perfectly equable respiration, and exhibit no signs of distress.

The apparatus used by Letellier is precisely the same as that employed and described by Boussingault. He finds that between 32° and 86° the variations in

\* Archiv für physiologische Heilkunde, 1844, No. 4.

the amount of carbonic acid are very great; in fact, the carbon burnt at  $32^{\circ}$  is double the amount consumed at  $86^{\circ}$ . At an ordinary temperature the amount is intermediate, sometimes inclining slightly to one side, sometimes to the other. Another point worthy of notice is the similitude presented by the variations in animals so differently organized as those on which the experiments were made. Small animals produced results similar to larger ones, and the same law held for birds and mammalia.

We will, in illustration, take an animal from each category; the numbers refer to the amount of carbonic acid developed in the course of an hour:—

	Temperature of Air from $59^{\circ}$ to $86^{\circ}$ .	Temperature of Air from $85^{\circ}$ to $106^{\circ}$ .	Temperature of Air about $32^{\circ}$ .
	Grammes.	Grammes.	Grammes.
A canary . . . .	0.250	0.129	0.325
A turtle-dove . .	0.684	0.366	0.974
Two mice . . . .	0.498	0.268	0.531
A guinea-pig . .	2.080	1.453	3.006

Here we see that the carbonic acid exhaled at  $32^{\circ}$  amounts in the mammalia to double the amount at an elevated temperature, and in birds the difference is still more striking.

#### § IV.—*Special Chemistry of the Blood in Health and Disease.*

19. A simple method of determining some of the most important constituents of the blood has been recently given by Figuier.\* It is based on the fact made known many years ago by Berzelius, that after the addition of a solution of a neutral salt to defibrinated blood, the corpuscles do not (as before) pass through filtering paper. On the addition of two parts of a solution of sulphate of soda, of spec. grav. 1.130, to one of blood, Figuier found that the whole of the corpuscles remained on the surface of the fibrin. The following are the steps of his analysis. The fibrin is removed by whipping, (in the ordinary manner,) dried and weighed; the weight of the corpuscles is ascertained by the method indicated, and that of albumen by coagulating by means of heat the filtered solution. The proportion of water is determined by evaporating a small known weight of the blood. The principal advantage of Figuier's method is the facility with which the most important constituents may be determined, without any very difficult chemical manipulations.

20. The next contribution to the chemistry of the blood that falls under our notice, is the elaborate memoir of MM. Becquerel and Rodier.† As this is, without doubt, one of the most important chemical papers that has recently appeared, we shall give a tolerably full abstract of its contents. It is based on 160 analyses of the blood in health and disease, and is the result of eighteen months laborious and careful investigation. They arrange the memoir under three heads. In the first they describe their method of analysis, and then proceed to notice, in a general manner, certain purely physical and chemical results deducible from the analyses of the blood. In the second, they lay down the general conclusion to which their analyses have led them, regarding the blood in health, pregnancy, and disease; and in the third they apply these general principles to the study of the blood in special diseases.

21. *First Series of Operations.* These are intended to ascertain, first, the density of the blood and of the serum; and, second, the weight of the fibrin, of the corpuscles, and of the solid residue of the serum. In these steps they closely follow the method adopted many years ago by Dumas, and, like him, they assume that all the water in the blood appertains to the serum. They never use less than 11 or 12 ounces of blood for analysis. It is received in two separate vessels, one larger than the other. The blood in the smaller vessel is whipt, and the fibrin thus obtained is washed, dried, and weighed. The defibrinated blood is put

\* Ann. de Chim. et de Phys., vol. ii., p. 503.

† Gazette Méd. de Paris, Nos. 47, 48, 49, 50, 51, for 1844.

by for further analysis. The blood in the larger vessel is allowed to coagulate, the serum is carefully separated, and the clot (after its physical character has been duly noticed) may be thrown away.

A. A portion of the defibrinated blood is first weighed at a given temperature,  $50^{\circ}\text{F.}$ , in a specific gravity bottle, and thus, by a simple calculation, the weight of the blood when defibrinated is obtained; and consequently the weight of the fibrin contained in 1000 parts of blood. This being effected, a known portion of defibrinated blood is weighed, dried, and then again weighed. In this manner the quantity of water is determined. By way of illustration, let us suppose that 100 parts of defibrinated blood yield 20 parts of solid materials, and 80 of water. The 20 parts of solid constituents are to be calcined, in order to determine the inorganic constituents, to which we shall revert presently.—B. The density of the serum being ascertained, a given quantity of it is dried, and then again weighed. The difference of the weight indicates the amount of water. Suppose, for instance, that 100 parts of serum yield 10 parts of solid constituents, and 90 of water. We have now all the requisite data for determining the weight of the corpuscles, and of the solid constituents of the serum contained in 100 parts of defibrinated blood. In fact, as all the water of the defibrinated blood is presumed to belong to the serum, we have the following proportions. If  $x$  represents the weight of the solid constituents of the serum contained in 100 parts of the defibrinated blood, we have  $90 : 10 :: 80 : x$ , whence it follows that  $x = 8.8$ ; and if we subtract this from 20, the weight of the dried blood, we have 11.2 left to represent the weight of the corpuscles. Hence 1000 parts of blood contain,

Water . . . . .	800	Solid residue of serum . . . . .	88
Corpuscles . . . . .	112		

The weight of the fibrin has been already determined, but is so slight relatively to the mass of the blood, that the trifling correction for it may be neglected.

*Second Series of Operations.* These are for the purpose of determining the extractive and fatty matters.

The serum, being carefully dried and pulverized, is treated several times with boiling water, till every thing that can be extracted by that menstruum is taken up. These are, (a) extractive and colouring matters, and (b) salts existing in a state of freedom dissolved in the serum. The serum thus extracted by water is dried and again weighed. The difference of weight indicates that of the above-named substances extracted by the water. The dried residue is then treated, to complete extraction, with boiling alcohol, which leaves an insoluble residue of pure albumen, which must be dried and weighed. The serolin, phosphorised fat, cholesterin, and saponified fat, may be separated from the alcohol, by Boudet's method.

*Third Series of Operations.* These are conducted with the object of determining the weight of the iron, and of the various inorganic constituents. The blood is first reduced to a charred mass in a platinum crucible; it is then transferred to a porcelain crucible, in which it is exposed to a dull red heat for about an hour, at the expiration of which period the carbon is almost entirely removed. This is one of the most difficult steps of the analysis; for if the heat is too low the carbon is not liberated: if, on the other hand, it is too high, the greater part of the chloride of sodium is lost. In fact, with all precautions, some chloride of sodium always escapes, and some carbon remains after calcination. This residual carbon is estimated in the following manner:—Suppose that the whole incinerated ash weighs 20 grains, we treated 4 grains with boiling hydrochloric acid, which dissolves all the saline matters, with the exception of silica, (which exists in extremely minute quantity in the blood,) and leaves the carbon, which is dried and weighed. The remaining 16 grains are used for the determination of all the other inorganic constituents: they are treated with distilled water, which dissolves the greater portion of them. The solution is filtered through a weighed filter-paper, which is then calcined. The small quantity of carbon present, which is known by the preceding operation, is burned off during the calci-

action. By those two operations are obtained a soluble portion and an insoluble portion. The soluble portion contains chlorides, chiefly of sodium, and some other saline substance, especially free soda, carbonates and sulphates of soda, and of potash and phosphate of soda. All that can be effected is to separate and weigh separately the chlorides on the one hand, and all the other soluble salts on the other hand. It would be very desirable, no doubt, to isolate and estimate each salt separately, but the quantity of blood obtainable at a single bleeding is much too small to admit of this being done, when the object is at the same time to separate all the organic elements of the blood. The quantity of the chlorides is estimated by nitrate of silver, it being assumed that chloride of sodium is the only chloride present, which is not far from the truth; and subtracting the weight of the chlorides from the soluble mass, the weight of the other salts is determined.

The insoluble residue contains the phosphates (almost exclusively phosphate of lime) and peroxide of iron. Boiling acetic acid dissolves out the phosphates. Wash, filter, and ignite the filter-paper, and weigh. The difference of weight represents that of the phosphates. The residue is merely peroxide of iron, whence the weight of iron in the blood is deduced, as, with most chemists, we assume that iron exists free in the blood. It seems impossible to extract a greater number of substances from the blood drawn at one bleeding than is done during the foregoing processes.

### 32. ON SOME PURELY PHYSICAL AND CHEMICAL RESULTS DEDUCIBLE FROM THE ANALYSIS OF THE BLOOD, CONSIDERED GENERALLY.

a. Latterly almost exclusive attention has been paid to alterations in the quality of the blood, without reference to modifications in its quantity. But it seems obvious that the quantity of blood must be liable to variation; and though such variations cannot be accurately estimated, yet chemical observations enable us, if not to prove, to render it in the highest degree probable, that they do occur.

b. It is impossible to estimate the density possessed by the blood while it is circulating in the system. The coagulation of the fibrin, which begins the moment the blood issues from the vessels, is an insurmountable obstacle to doing so. Their experiments on the chemistry of defibrinated blood lead them to conclude that its density is proportional to the weight of the globules. Hence, the greater the density, the richer is the blood in globules.

c. The density of the serum depends on the quantity of solid materials, especially albumen, that it contains in solution. But it is important to note that this relation does not always exist, because of the difference that in some cases exists between the relative proportions of the extractive and fatty matters, free salts and albumen, held in solution.

d. All the substances which exist free in the blood are generally quite independent of each other, as regard the variations to which they are liable. But in some exceptional cases, where the blood is greatly impoverished, the proportion of all those substances may be simultaneously lessened, though in different proportions.

e. The soluble substances, to which the term "extractive matters and free salts" is applied, are of too complicated a character to allow of any conclusions being drawn from them.

f. The analysis of the inorganic matters contained in the blood comprises, not only those which are free in that liquid, but also those that are constituent parts of the albumen, globules, &c. They have, therefore, separated the result of this analysis from that of the 1000 parts of blood.

g. In all their analyses they have isolated and carefully weighed the iron, and have thence come to the conclusion that the weight of the iron is very probably proportional to that of the globules. But as the number obtained by dividing the weight of the iron by that of the globules was not always exactly the same, but sometimes presented a difference of some thousandths, they do not positively advance this position as true.

*h.* The peculiar colouring matter of the serum varies in quantity, whence the various shades of colour observed in that liquid. This colouring matter has never been isolated, but its physical characters by analogy indicate that it is the colouring matter of the bile, or rather that the colouring matter of the bile is that of the serum, which is separated from it by the liver.

*i.* The absolute or relative excess of fibrin is almost always announced by the formation of the buffy coat; and in most cases where it does not form, the excess of fibrin is indicated by more or less abundant whitish striæ near the upper surface of the clot.

*k.* The properties of the clot depend generally on the relative proportions of fibrin and globules. When the globules abound, and the fibrin is in natural or considerable quantity, the clot is bulky, firm, and covered with a greyish coat, or is at least streaked with whitish striæ. The clot is small when the globules are few and the fibrin is relatively in excess: when the globules are in natural quantity or abundant, and the fibrin in natural quantity, the characters of the clot are so variable, that no rule as to its appearance can be established. It may be large or small, firm or soft, mixable with the serum or not, uniform or marbled in aspect, &c. The same is the case when the fibrin is slightly diminished in quantity. If the fibrin is much diminished, the clot is necessarily soft and diffuent.

*23. Composition of the Blood in the Healthy Man.* The men (eleven in number) from whom the blood for analysis was taken, were respectively aged—one, 21 years; two, 23; one, 24; one, 28; one, 33; one, 38; one, 53; one, 55; and one, 66. They were all bled for trifling causes, not affecting their general health.

The following table exhibits the maxima, minima, and average numbers of the different constituents, in 1000 parts of the blood, of man:—

	Mean.	Maxima.	Minima.
Density of defibrinated blood . . . . .	1060.2	1062.0	1058.0
— of serum . . . . .	1028.0	1030.0	1027.0
Water . . . . .	779.0	800.0	760.0
Blood corpuscles . . . . .	141.1	150.0	131.0
Albumen . . . . .	69.4	73.0	62.0
Fibrin . . . . .	2.2	3.5	1.5
Extractive matters and free salts . . . . .	6.8	8.0	5.0
Fatty matters . . . . .	1.600	3.255	1.000
Serolin . . . . .	.090	.080	impound.
Phosphorized fat . . . . .	.488	1.000	.270
Cholesterin . . . . .	.088	.175	.030
Saponified fat . . . . .	1.004	2.000	.700

From 1000 parts of blood, after calcination, they obtained—

Chloride of sodium . . . . .	3.1	4.2	2.3
Other soluble salts . . . . .	2.5	3.2	2.0
Phosphates . . . . .	.334	.7	.235
Iron . . . . .	.565	.633	.508

*24. Composition of the Blood in the Healthy Female.* The eight women, from whom the blood for analysis was taken, were respectively aged—one, 22 years; one, 25; one, 26; two, 33; one, 36; one, 53; and one, 58.

The following table exhibits the maxima, minima, and average values of the different constituents:—

	Mean.	Maxima.	Minima.
Density of defibrinated blood . . . . .	1057.5	1060.0	1054.0
— of serum . . . . .	1027.4	1030.0	1026.0
Water . . . . .	791.1	813.0	773.0
Blood corpuscles . . . . .	127.2	137.5	113.0
Albumen . . . . .	70.5	75.5	65.0
Fibrin . . . . .	2.2	2.5	1.8

	Mean.	Maxima.	Minima.
Extractive matters and free salts . . . . .	7.4	8.5	6.2
Fatty matters . . . . .	1.620	2.860	1.0
Serolin . . . . .	.020	.060	
Phosphorized fat . . . . .	.464	.800	.250
Cholesterin . . . . .	.090	.200	.025
Saponified fat . . . . .	1.046	1.800	.725

From 1000 parts of blood, after calcination, they obtained—

Chloride of sodium . . . . .	3.9	4.0	3.5
Other soluble salts . . . . .	2.9	3.0	2.5
Phosphates . . . . .	.354	.650	.250
Iron . . . . .	.541	.575	.486

From these numbers the following important deductions may be drawn :—

1. The limits within which the composition of normal blood varies are very narrow, and are probably dependent on constitutions, age, and diet.

2. The number for the corpuscles exceeds 127, which used to be regarded as expressing the physiological mean.

3. The number for the fibrin, 2.2, is below the number 3, that is usually admitted as the mean of that constituent.

A comparison of these figures, with those furnished by the analysis of healthy male blood, lead to some important conclusions; the most important of which are, that the numbers obtained in these eight analyses do not agree so closely as those obtained in the analyses of male blood, the difference between the maxima and minima being greater; that female blood contains more water, and a much smaller proportion of corpuscles, than male blood. In both sexes the cholesterol increases with advanced age, and the iron is proportional to the corpuscles.

The effects of menstruation on the blood are deserving of attention. From a careful analysis of the facts in their possession, they conclude, that before menstruation commences, the amount of corpuscles is below the normal female average of 127; if menstruation is imperfectly established, if it is incomplete and irregular, the corpuscles are below the average; as soon as the function is thoroughly established, the amount of corpuscles rises, and varies between 127 and 137; and at the cessation of menstruation the corpuscles again diminish: in one instance they were observed to fall to 113, and in another to 121.

25. *Of the Blood during Pregnancy.* The following table gives the maxima, minima, and average values of the different constituents of the blood of nine women in different stages of pregnancy, varying from the fourth to the seventh month :—

	Mean.	Maxima.	Minima.
Density of de fibrinated blood . . . . .	1051.5	1055.5	1046.2
— of serum . . . . .	1025.5	1026.8	1023.6
Water . . . . .	801.6		
Blood-corpuscles . . . . .	111.8	127.1	87.7
Albumen . . . . .	66.1	68.8	62.4
Fibrin . . . . .	3.5	4.0	2.5
Extractive matters and free salts . . . . .	6.6	8.7	4.7
Fatty matters . . . . .	1.922	2.519	1.158
Serolin . . . . .	variab.	.108	.018
Phosphorized fat . . . . .	.646	.863	.381
Cholesterin . . . . .	.061	.225	.030
Saponified fat . . . . .	1.195	1.323	.737

From 1000 parts of blood, after calcination, they obtained—

Chloride of sodium.....	3·2	3·9	2·3
Other soluble salts.....	2·4	2·8	1·8
Phosphates.....	·425	·690	·282
Iron.....	·449	·490	·370

From a consideration of all their analyses, they conclude that the blood undergoes certain modifications, corresponding with the advanced state of pregnancy. The chief of these modifications are, a diminution of the corpuscles, and of the albumen, and an increase of the fibrin, of the phosphorized fat, and of the water.

Before proceeding to the subject of the blood in disease, I would observe that Becquerel and Rodier seem entirely ignorant of the labours of Simon, Nasse, Marchand, and Enderlin. In some respects this renders their labours the more valuable; while, at the same time, there are reasons why we could have wished that they were better acquainted with the proceedings of chemistry in Germany.

26. According to Simon, 1000 parts of blood contain—

	In the Male.	In the Female.
Water.....	791·900	798·656
Solid constituents.....	208·100	201·344
Fibrin.....	2·011	2·208
Fat.....	1·978	2·713
Albumen.....	75·590	77·610
Globulin.....	105·165	100·890
Hæmatin.....	7·181	5·237
Extractive matters and salts..	14·174	9·950

According to Nasse,\* 1000 parts of the blood of man contain—

Water.....	798·402	Albumen.....	74·194
Solid constituents.....	201·598	Blood-corpuscles.....	116·529
Fibrin.....	2·233	Soluble salts.....	6·622
Fat.....	1·970		
The soluble salts consisted of—		The insoluble salts consisted of—	
Alkaline phosphates.....	·823	Peroxide of iron.....	·834
Alkaline sulphates.....	·202	Lime.....	·183
Alkaline carbonates.....	·957	Phosphoric acid.....	·201
Chloride of sodium.....	4·690	Sulphuric acid.....	·052
	6·622		1·270

The insoluble salts and extractive matters are probably included in Nasse's analysis in the albumen.

The salts of the blood have been analysed by Marchand. They amount (he observes) to 6·28—6·82% of the dried residue. The four following analyses are given in his *Lehrbuch der physiologischen Chemie*, 1844.

	1.	2.	3.	4.
Chloride of sodium.....	3·91	3·42	3·81	3·82
Chloride of potassium.....	0·32	0·21	0·31	0·38
Carbonate of soda.....	0·62	0·52	0·72	0·61
Sulphate of soda.....	0·31	0·52	0·38	0·42
Phosphate of soda.....	0·56	0·72	0·68	0·59
Phosphate of lime.....	0·25	0·31	0·28	0·30
Phosphate of magnesia.....	0·21	0·20	0·25	0·28
Lactate of soda.....	0·32	0·28	0·35	0·34
Lactate of ammonia.....	0·12	0·10	0·00	0·08

\* Simon's *Beitrag*, p. 128.

According to Enderlin, 100 parts of the ash of human blood contain—

Tribasic phosphate of soda ( $3 \text{ Na O, PO}_5$ ).....	22.100	} 83.740
Chloride of sodium.....	51.769	
Chloride of potassium.....	4.416	
Sulphate of soda.....	2.461	
Phosphate of lime.....	3.636	} 15.175
Phosphate of magnesia.....	0.769	
Peroxide of iron and phosphate of iron.....	10.770	

Hence Enderlin excludes both free alkalies and their carbonates : Nasse and Marchand exclude only the former : while Becquerel and Rodier, without apparently being aware that their presence has ever been called in question, admit them both.

27. *On Diseased Blood.* From a survey of all their analyses, Becquerel and Rodier deduce eight laws.

*First Law.* The simple fact of the development of a disease almost always modifies, in a notable manner, the composition of the blood.

The following table represents the mean composition of the blood in 120 cases of acute diseases :—

	Men.	Women.
Density of defibrinated blood	1056	1055
— of serum	1027	1026
Water	800	804
Blood-corpuscles	125	118
Albumen	66	65
Extractive matters and free salts	7	7.5
Fatty matters	1.7	1.7
Serolin	variable.	variable.
Phosphorized fat	.56	.60
Cholesterin	.11	.13
Saponified fat	1.00	.90

In 1000 parts of blood, after calcination, they found :—

Chloride of sodium	3.1	3.0
Other soluble salts	2.6	2.5
Phosphates	.45	.45
Iron	.50	.49

On comparing these numbers with the analyses of healthy blood, we observe a diminution of the density, both of the blood generally, and of the serum ; a very marked diminution of the corpuscles, and a sensible, but not so strongly marked, diminution of the albumen ; a slight augmentation of the fatty matters, in consequence of an increase in the phosphorized fat and cholesterin ; and a marked increase in the phosphates. The fibrin has not been included in this table, because its variations are dependent on other influences than those of the mere disease.

*Second Law.* Venesection exercises a remarkable influence on the composition of the blood : the more marked the oftener it is repeated.

This law is illustrated by the two following tables :—

*Mean Composition of the Blood of Twenty Persons, bled Twice.*

	1st Venesection.	2nd Venesection.
Density of defibrinated blood	1055.0	1051.2
— of serum	1026.1	1025.3
Water	796.2	812.0
Blood-corpuscles	125.4	112.0
Albumen	66.2	62.5
Fibrin	2.7	3.8



	1st Venesection.	2nd Venesection.
Extractive matter and free salts -	6.8	7.6
Fatty matters - - - -	1.637	1.560
Serolin - - - -	.037	.047
Phosphorized fat - - -	.490	.465
Cholesterin - - - -	.178	.150
Saponified fat - - - -	.962	.900

1000 parts of blood, after calcination, yielded—

Chloride of sodium - -	2.8	3.4
Other soluble salts - -	2.7	2.5
Phosphates - - - -	.435	.417
Iron - - - -	.527	.488

*Mean Composition of the Blood of Ten Persons, bled Three Times.*

	1st Venesection.	2nd Venesection.	3rd Venesection.
Density of defibrinated blood	1056.0	1053.0	1049.6
— of serum - - - -	1025.8	1026.3	1025.6
Water - - - -	793.0	807.7	823.1
Blood-corpuscles - - -	129.2	116.3	99.2
Albumen - - - -	65.0	63.7	64.6
Fibrin - - - -	3.5	3.8	3.4
Extractive matters and free salts	7.7	6.9	8.0
Fatty matters - - - -	1.662	1.584	1.530
Serolin - - - -	.026	.088	.012
Phosphorized fat - - -	.636	.489	.450
Cholesterin - - - -	.106	.156	.149
Saponified fat - - - -	.893	.851	.919

1000 parts of blood yielded, after calcination:—

Chloride of sodium - -	2.8	3.5	3.0
Other soluble salts - -	2.6	2.5	2.7
Phosphates - - - -	.404	.493	.348
Iron - - - -	.513	.471	.468

Here we see that repeated venesections impoverish the blood, and render it more watery; slightly diminish the albumen; do not influence the fibrin, or extractive matters and free salts; slightly diminish the fatty matters, and produce a very marked and decided diminution of the blood-corpuscles. This is, in fact, the leading effect of bloodletting. The iron diminishes in a fixed ratio with the corpuscles; the salts are not affected.

*Third Law.* In a plethoric condition of the system, there is no relative increase in the number of the corpuscles, or, in fact, any other change in the composition of the blood; it is simply the mass of the blood that is increased.

The authors arrived at this law from an examination of the blood of six men and one woman, suffering from the ordinary symptoms of plethora; such as a florid countenance, full habit of body, frequent headache, vertigo, buzzing in the ears, &c.

*Mean Composition of the Blood of Six Plethoric Men and of One Woman.*

	6 Men.	1 Woman.
Density of defibrinated blood - -	1059.0	1059.0
— of serum - - - -	1028.3	1028.8
Water - - - -	780.4	744.0
Blood-corpuscles - - - -	138.0	131.5
Albumen - - - -	72.3	75.1
Fibrin - - - -	2.4	2.1
Extractive matters and free salts -	6.3	5.8
Fatty matters - - - -	1.555	2.150

	6 Men.	1 Woman.
Serolin	variable.	·025
Phosphorized fat	·433	·673
Cholesterin	·089	·114
Saponified fat	1·014	1·038

The salts yielded by the calcination of 1000 parts of blood, were—

Chloride of sodium	3·7	3·5
Other soluble salts	2·9	2·8
Phosphates	·341	·334
Iron	·547	·544

A comparison of this table with the mean composition of the blood in health, will show that the blood in plethora exhibits no striking chemical peculiarities. The amount of fibrin in these cases was very irregular, varying from 3·5 to 1.

*Fourth Law.* A diminution in the amount of the corpuscles in 1000 parts of blood, characterizing the condition of the system to which we apply the term *anæmia*, frequently occurs in diseases, either as an essential character, as a complication, or as a sequence.

Anæmia occurs—(1) in chlorosis; (2) after repeated venesections, or copious hemorrhage; (3) as a result of any drain on the system, as, for instance, prolonged suppuration, diarrhœa, &c.; (4) as a consequence of lead-poisoning, and intermittents of long duration; (5) during convalescence after severe illnesses, accompanied with much prostration and debility; (6) in persons improperly or insufficiently fed; and (7) in persons residing in a damp and unhealthy locality.

Mean composition of the blood, in thirty-five cases in which there was a marked diminution of the corpuscles:—

Density of defibrinated blood	1047·4	Extractive matters and free salts	8·0
— of serum	1017·1	Fatty matters	1·806
Water	822·0	Serolin	variable.
Blood-corpuscles	94·7	Phosphorized fat	·663
Albumen	68·0	Cholesterin	·110
Fibrin	3·5	Saponified fat	·992

1000 parts of blood yielded, after calcination:—

Chloride of sodium	3·5	Phosphates	·545
Other soluble salts	2·4	Iron	·366

*Fifth Law.* The development of an inflammatory disease modifies the composition of the blood in a remarkable degree; which is especially obvious in the great increase of fibrin.

The mean composition of inflammatory blood is given in the following tables:—

	Men.	Women.
Density of defibrinated blood	1056·3	1054·5
— of serum	1027·0	1026·8
Water	791·5	801·0
Blood-corpuscles	128·0	118·6
Albumen	66·0	65·8
Fibrin	5·8	5·7
Extractive matter and free salts	7·0	7·2
Fatty matters	1·742	1·669
Serolin	·020	·024
Phosphorized fat	·602	·601
Cholesterin	·136	·130
Saponified fat	·884	·914

1000 parts of blood, after calcination, yielded—

	Men.	Women.
Chloride of sodium.....	3.1	3.0
Other soluble salts .....	2.4	2.7
Phosphates .....	.448	.314
Iron .....	.490	.480

Here we observe a great increase in the amount of the fibrin and cholesterin, the former varying from 4 to 10, and the latter being almost doubled. The albumen is diminished.

*Sixth Law* There are certain circumstances under which the fibrin may fall below the normal average, and, possibly, its physical characters be affected.

Becquerel and Rodier arrange these circumstances under two distinct categories.

The first category includes "intoxication," in the most general acceptation of the term; embracing typhoid, yellow, and intermittent fevers, the plague, the various exanthematous diseases, &c; in fact, any intoxication produced by the passage of any foreign matter, either directly or by absorption, into the blood.

In the second category they place those cases in which there is a diminution of fibrin, arising from unhealthy and insufficient food; in fact, those conditions under which such affections as *purpura hæmorrhagica* are developed.

*Seventh Law* When a secretion is either completely checked, or much diminished, we often find that the blood contains some of its most essential components in great excess. The occurrence of an excess of urea in the blood, in cases in which the functions of the kidney are affected, has long been known: Becquerel and Rodier have found, that when the biliary secretion is suspended or diminished, the amount of cholesterin in the blood is much increased.

*Eighth Law* There are three diseases in which the albumen of the blood is notably diminished, viz, in Bright's disease; in certain affections of the heart, accompanied with dropsy; and in severe cases of puerperal fever.

The data upon which these laws are founded may be traced in the observations on the blood in individual diseases.

## 28. I. BLOOD CONTAINING AN EXCESS OF FIBRIN: HYPERINOSIS.

(1.) *Phlegmasia alba* In a case of this disease occurring six weeks after delivery, in which the blood was analysed by Becquerel and Rodier, they found a considerable diminution of the blood-corpuscles (92.6) and an augmentation of the fibrin (4.2). The cholesterin was in excess (.223,) and the phosphates were abundant.

(2.) *Pericarditis*. In a case of pericarditis with effusion, occurring in a woman aged 40 years, in which the blood was analysed by Becquerel and Rodier, the following results were obtained:—

	1st Venesection.	2nd Venesection.	3rd Venesection.
Density of defibrinated blood....	1045.8	1042.4	1346.5
— of serum .....	1023.0	1021.8	1024.3
Water.....	831.0		847.0
Solid constituents. ".....	169.0		153.0
Fibrin.....	2.3	2.3	3.4
Fat.....	1.094		
Albumen.....	53.0	51.0	60.4
Blood-corpuscles .....	105.0	92.0	78.0

In the first analysis, the phosphates were in excess (.684 :) in other respects the salts occurred in their normal proportions.

At the period of the third venesection, the heart symptoms were much alleviated. The most remarkable feature in the blood is the extreme diminution of the albumen. There was no albumen in the urine.—*See Law 8.*

(3.) *Brnchitis*. Becquerel and Rodier have analysed the blood in eight cases of acute bronchitis, four males and four females.

The mean results are expressed in the following table:—

	Males.	Females.
Density of defibrinated blood - - -	1056.7	1056.6
of serum - - -	1027.1	1027.7
Water - - -	793.7	803.4
Solid constituents - - -	206.3	196.6
Fibrin - - -	4.8	3.5
Fat - - -	1.621	1.715
Albumen - - -	64.9	68.8
Blood-corpuscles - - -	129.2	115.3
Extractive matter and salts - - -	5.8	7.3
The salts consisted of		
Chloride of sodium - - -	3.2	3.3
Other soluble salts - - -	2.9	2.8
Phosphates - - -	3.46	3.09
Iron - - -	5.13	4.79

Scherer\* has published an analysis of the blood of a woman in the seventh month of pregnancy, who was suffering from bronchitis, and probably from tubercular phthisis. The serum had a sp. gr. of 1022.69, and the blood consisted of—

Water - - -	825.698	Blood-corpuscles - - -	71.069
Solid residue - - -	174.302	Extractive matters - - -	20.178
Fibrin - - -	4.568	Soluble salts - - -	6.399
Albumen - - -	70.636	Earthy phosphates - - -	1.825

(4.) *Pneumonia*. Dr. Rindskopf† has made several analyses of the blood in pneumonia.

1. A young man, with a very severe attack of pneumonia; delirium, and all the signs of arachnitis. Two venesections were instituted during the last thirty-six hours. The first gave fibrin 5.4: the second was more perfect, and yielded—

Water - - -	828.566	Soluble salts - - -	8.302
Solid constituents - - -	171.434	Insoluble salts - - -	1.107
Fibrin - - -	6.674	Extractive matters - - -	5.248
Albumen & blood-corpuscles	150.103		

2. A man aged 60 years, who had suffered for a considerable time from chronic bronchitis and emphysema, was attacked with broncho-pneumonia. The blood, which was taken shortly before his death, consisted of—

Water - - -	812.566	Albumen and blood-corpuscles	160.300
Solid constituents - - -	187.434	Salts - - -	10.930
Fibrin - - -	12.726	Extractive matters - - -	3.478

3. In the blood of a young man aged 19 years, suffering from pneumonia, Rindskopf found—

	1st Venesection.	2nd Venesection.
Water - - -	775.448	783.944
Solid constituents - - -	224.552	216.056
Fibrin - - -	6.702	7.723
Albumen - - -	79.021	65.744
Blood-corpuscles - - -	122.097	120.689
Salts - - -	9.201	10.416
Extractive matters - - -	7.531	11.661

4. In a case of pneumonia after catarrh, the blood taken at the second, third, fourth, and fifth venesections was examined. In addition to the bleedings, tartarized antimony and calomel were administered. The patient recovered.

	2d Venesection.	3d Venesection.	4th Venesection.	5th Venesection.
Water - - -	796.494	793.362	807.696	809.650
Solid constituents - - -	203.506	206.638	192.301	190.350
Fibrin - - -	5.919	7.715	10.384	8.155
Albumen and blood-corpuscles	173.605	169.883	165.960	160.522
Soluble salts - - -	10.188	7.952	15.957	11.531
Insoluble salts - - -	1.340	1.404		4.151
Extractive matters - - -	11.454	19.684		5.991

\* Untersuchungen, &c., p. 87.

† Canstatt's Jahrbuch, 1844.

5. In a case of pneumonia of four weeks' standing, accompanied with catarrh and delirium tremens, in which tartarized antimony was administered, and recovery took place, the following results were obtained :—

	2nd Venesection.	3rd Venesection.	4th Venesection.
Water - - - -	793·237	797·915	
Solid constituents, - - -	906·763	903·085	
Fibrin - - - -	7·893	9·087	9·478
Albumen and blood-corpuscles	157 916	164·451	
Salts - - - -	10·978	8·291	
Extractive matters - - -	29·975	20·256	

Heller\* has analysed the blood of a young man, aged 21 years, suffering from pneumonia, the left lung being perfectly hepatized. The colour of the blood was rather dark : as it flowed from the veins, its reaction was perfectly neutral. The serum, after the separation of the clot, had an alkaline reaction, a specific gravity of 1025, and was of a darker yellow colour than usual, although there was no biliphaein present.

The blood was composed of 600 parts of clot, and 400 of serum. It contained, in 1000 parts—

Water - - - -	773 226	Blood-corpuscles - - -	145·574
Solid constituents - - -	226 744	Residue of serum - - -	76·850
Fibrin - - - -	4 320		

Becquerel and Rodier have analysed the blood of five women suffering from pneumonia, two of whom were bled only once, while in three venesection was repeated. The mean composition of the blood is represented in the following table :—

	1st Venesection.	2nd Venesection.
Density of defibrinated blood - - -	1052·6	1050 9
— of serum - - - -	1025·0	1023 0
Water - - - -	801·0	808·0
Solid constituents - - -	199 0	193 0
Fibrin - - - -	7·4	6 3
Fat - - - -	1·687	1·618
Albumen - - - -	61·1	59·7
Blood-corpuscles - - -	123 5	113 9
Extractive matters and salts - - -	6·4	7 4

The following salts were contained in 1000 parts of blood :—

Chloride of sodium - - -	28	3·1
Other soluble salts - - -	2 7	2·4
Phosphates - - - -	308	445
Iron - - - -	493	513

Zimmerman† has found the specific gravity of the blood in this disease as high as 1065.

Hoffman‡ has recently made four ultimate analyses of dried pneumonic blood. In all these cases the blood was buffed.

	Ash.	Carbon.	Hydrogen.
A. 1st venesection . . .	4·365	57·428	8·615
" 2nd " . . .	4·081	52·280	
B. 1st " . . .	3·880	51·966	8·543
" 2nd " . . .	3·784	51·149	7·832

These analyses are not sufficiently numerous to allow of our attempting to draw any conclusions from them.

Two analyses of the blood in pneumonia biliosa have recently appeared ; one by Scherer,§ the other by Heller.||

The individual whose blood was analysed by Scherer was a robust young man,

\* Archiv für Physiologische und Pathologische Chemie und Mikroskopie, vol. i., p. 4.

† Hufeland's Journal, 1844.

‡ Annal. der Chemie und Pharmacie, 1844.

§ Untersuchungen, &c., p. 75.

|| Archiv, &c., vol. i. p. 2.

aged 39 years. The clot was tolerably firm and tough, and covered with a greenish-yellow buffy coat: the serum exhibited a similar tint, and there was biliphæin in the urine. The conjunctiva was coloured yellow; and there was considerable gastric disturbance. The blood drawn at the first venesection yielded—

Water . . . . .	779.00	Albumen . . . . .	72.36
Solid constituents . . . . .	221.00	Salts . . . . .	9.57
Fibrin . . . . .	9.70	Extractive matters . . . . .	4.63
Blood corpuscles . . . . .	124.60		

Blood was again taken, in consequence of further symptoms of congestion. It yielded—

Water . . . . .	785.00	Albumen . . . . .	65.36
Solid constituents . . . . .	215.00	Salts . . . . .	8.31
Fibrin . . . . .	9.40	Extractive matters . . . . .	9.67
Blood-corpuscles . . . . .	122.26		

Three days after this venesection, the patient was again bled. The blood contained—

Water . . . . .	780.00	Albumen . . . . .	69.83
Solid constituents . . . . .	220.00	Salts . . . . .	7.63
Fibrin . . . . .	12.72	Extractive matters . . . . .	11.36
Blood-corpuscles . . . . .	118.47		

The blood obtained by a fourth venesection yielded—

Water . . . . .	796.00	Fibrin . . . . .	8.87
Solid constituents . . . . .	204.00	Blood-corpuscles . . . . .	106.26

From this period there was a gradual amendment.

In Heller's case, the blood was taken from a robust man, aged 31 years. The clot was firm, and slightly buffed; the serum was of a deep yellowish red colour, very alkaline, of specific gravity 1023, and on the addition of nitric acid a blue coagulum was formed, showing that biliphæin was present. The blood consisted of 521 parts of clot, and 479 of serum. It contained, in 1000 parts—

Water . . . . .	781.649	Blood-corpuscles . . . . .	147.114
Solid residue . . . . .	218.351	Residue of serum (with biliphæin) . . . . .	65.124
Fibrin . . . . .	6.113		

Heller observes, that he has often been able to detect biliphæin in the blood of pneumonic patients, when there have been no other indications of a disordered state of the hepatic functions.

5. *Pleuritis*. Becquerel and Rodier have analysed the blood of five men attacked with acute pleuritis. The mean composition of the blood is given in the following table:—

Density of defibrinated blood . . . . .	1055.0	Fat . . . . .	1.9
serum . . . . .	1026.0	Albumen . . . . .	65.4
Water . . . . .	798.6	Blood-corpuscles . . . . .	120.4
Solid constituents . . . . .	201.4	Extractive matters and salts . . . . .	7.6
Fibrin . . . . .	6.1		

The salts consisted of—

Chloride of sodium . . . . .	3.0	Phosphates . . . . .	478
Other soluble salts . . . . .	2.0	Iron . . . . .	461

Here we see that the blood-corpuscles and albumen are considerably diminished, while the fibrin is increased.

6. *Peritonitis*. A case of peritonitis, in which the serum presented a milky appearance, has been recorded by Heller.\* It occurred in a robust, but not corpulent man, aged 40 years. The blood when first drawn, was of the ordinary colour, and, on standing, the clot and serum separated perfectly, the former not exhibiting a buffy coat.

\* *Archiv*, vol. i. p. 5.

In 1000 parts of blood there were—

Fibrin . . . . .	4.72	Blood-corpuscles . . . . .	80.13
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In 1000 parts of serum there were—

Water . . . . .	829.515	Albumen . . . . .	108.791
Solid residue . . . . .	170.485	Extractive matters and salts . . . . .	11.222
Fat . . . . .	50.473		

The fat was perfectly saponifiable with potash, and yielded no traces of cholesterol. After the separation of the clot, the serum exactly resembled milk. Its reaction was alkaline, and its specific gravity 1024.35. In the blood of a girl, aged 18 years, suffering from a slight attack of peritonitis, Becquerel and Rodier found a marked diminution of the blood-corpuscles, and an increase of the fibrin (5.) The albumen remained normal, the phosphates and the cholesterol were increased. The serum was abundant, limpid, and yellow; the clot large and firm. In a woman, aged 21 years, attacked with metro-peritonitis, Scherer observed a tolerably large buffy coat, apparently more gelatinous than tough. The clot was rather large, but not very firm. The serum was neutral.

The blood contained, in 1000 parts

Water . . . . .	814.53	Blood-corpuscles . . . . .	70.16
Solid constituents . . . . .	185.47	Fat and extractive matters . . . . .	6.02
Fibrin . . . . .	5.32	Salts . . . . .	7.13
Albumen . . . . .	96.35		

In two days afterwards the blood contained—

Water . . . . .	832.58	Albumen . . . . .	100.25
Solid constituents . . . . .	167.42	Blood-corpuscles . . . . .	52.30
Fibrin . . . . .	4.02	Salts and extractive matters . . . . .	11.42

The buffy coat had a more gelatinous appearance, and the serum was redder, than on the former occasion. Death occurred two days after the second venesection.

In a case of metro-peritonitis, in which the blood was analysed by Heller,\* the clot was soft, and exhibited a well marked buffy coat: the serum was clear but of a deep yellow colour, and contained a large quantity of biliphein. Its specific gravity was 1024. The blood consisted of 486.5 parts of clot, and 513.5 of serum, and contained—

Water . . . . .	820.02	Blood-corpuscles . . . . .	89.12
Solid constituents . . . . .	179.98	Residue of serum (with biliphein) . . . . .	85.09
Fibrin . . . . .	7.78		

7. *Rheumatism.* Dr. Rindskopf† has analysed the blood of a woman suffering under rheumatism, accompanied with pneumonia. He found, in 1000 parts—

	1st. Venesection.	2nd Venesection.
Water . . . . .	809.973	
Solid constituents . . . . .	190.027	
Fibrin . . . . .	4.652	5.856
Albumen and blood-corpuscles . . . . .	166.954	
Salts . . . . .	12.188	
Extractive matters . . . . .	6.233	

Becquerel and Rodier have analysed the blood of four men suffering from acute rheumatism. The mean composition of the blood is given in the following table:—

Density of defibrinated blood . . . . .	1055.5	Fat . . . . .	1.6
serum . . . . .	1025.8	Albumen . . . . .	66.2
Water . . . . .	798.9	Blood-corpuscles . . . . .	118.7
Solid constituents . . . . .	101.1	Extractive matters and salts . . . . .	8.1
Fibrin . . . . .	5.8		

\* Archiv, vol. i, p. 120.

† Comstedt's Jahrbuch, 1844.

8. *Erysipelas*. The blood in a case of erysipelas of the hand, analysed by Rindskopf, yielded 7·71 of fibrin. The blood-corpuscles and other constituents were not determined.

In a case of erysipelas of the face, occurring in a young man aged 20 years, Heller found that the blood separated into 648·96 parts of clot, and 341·04 of serum. The clot was tolerably firm, and covered with a buffy coat. The serum was of a fawn colour, and turbid, in consequence of suspended hæmatoglobulin. It contained no biliphein.

The blood contained, in 1000 parts—

Water	-	-	-	762·44	Blood-corpuscles	-	-	141·71
Solid constituents	-	-	-	237·59	Solid residue of serum	-	-	90·40
Fibrin	-	-	-	5·45				

9. *Phthisis*. Becquerel and Rodier examined the blood of nine persons affected with pulmonary phthisis, viz., five men and four women. The following table represents the mean composition of the blood of the men :—

	1st Venesection.	2nd Venesection.	3rd Venesection.
Density of defibrinated blood	- 1056·7	1055·5	1050·3
serum	- 1028·0	1026·3	1025·5
Water	- 794·8	799·8	821·0
Solid constituents	- 205·2	200·2	179·0
Fibrin	- 4·8	4·2	3·6
Fat	- 1·554	1·443	1·060
Albumen	- 66·2	65·0	62·0
Blood-corpuscles	- 125·0	122·7	103·5
Extractive matters and salts	- 7·7	6·7	8·9

Mean composition of the blood of phthisical women :—

Density of defibrinated blood	1055·4	Fat	-	-	-	1·729
serum	- 1028·2	Albumen	-	-	-	70·5
Water	- 796·8	Blood-corpuscles	-	-	-	119·4
Solid constituents	- 203·2	Extractive matters and salts	-	-	-	7·6
Fibrin	- 4·0					

10. *Febris Puerperalis*. The blood in this disease has been analysed by Heller.\* It was of a very dark brown colour, but coagulated in the ordinary manner: the serum was turbid, but after standing for sometime became clear; its reaction was alkaline, its specific gravity 1025, and it contained no biliphein. The clot was dark, of a loose consistence, and covered with a strong buffy coat, over which there was a delicate membrane, that presented under the microscope a finely granular appearance, and fat-vesicles. In 1000 parts of blood there were contained—

Water	-	-	-	833·85	Blood-corpuscles	-	-	77·52
Solid constituents	-	-	-	165·15	Albumen and extractive matters	-	-	77·47
Fibrin	-	-	-	5·16	Fixed salts	-	-	6·00

The blood has been partially analysed in two cases of this disease by Becquerel and Rodier. In the first case the blood, taken at the first venesection, yielded fibrin (4·3), albumen (55·6), and blood-corpuscles (77·3:) at the second venesection the fibrin was (4·2), the albumen (5·4), and the blood-corpuscles (66·6.) The cholesterol and the phosphates exceeded the normal amount. In the second case the fibrin was normal, the albumen (43,) and the blood-corpuscles (70.)

11. *Convulsions*. The blood of a girl, aged 20 years, who frequently had forty or fifty attacks in the course of 24 hours, was subjected to several analyses by Heller.† The blood taken on the first occasion was of rather a dark colour; the clot was loose, and the serum was turbid and light red, in consequence of the

\* Archiv, &c., p. 20.

† Archiv, &c., p. 113.



presence of hæmatin: the specific gravity of the serum was 10.80, and the relation of the clot to the serum as 446:554.

The blood contained, in 1000 parts—

Water	-	-	-	797.00	Albumen, with extractive				
Solid constituents	-	-	-	203.00	matters	-	-	-	96.03
Fibrin	-	-	-	6.00	Fixed salts	-	-	-	8.35
Blood-corpuscles	-	-	-	92.36					

A second venesection was instituted 33 days afterwards. The physical characters of the serum were much as on the former occasion, except that its specific gravity was only 1025. The blood was taken from the arm, and partly from the foot. The blood from the arm separated into 598.4 parts of clot, and 401.6 of serum, and was composed of—

Water	-	-	-	800.06	Blood-corpuscles	-	-	113.16
Solid residue	-	-	-	199.94	Residue of serum	-	-	82.35
Fibrin	-	-	-	4.44				

The blood from the foot separated into 568.6 parts of clot, and 431.4 parts of serum, and was composed of—

Water	-	-	-	778.43	Blood-corpuscles	-	-	125.80
Solid constituents	-	-	-	221.57	Residue of serum	-	-	89.93
Fibrin	-	-	-	5.84				

In the blood from the foot, the clot was covered with buffy coat of about two lines in thickness; in the blood from the arm there was no indication of that phenomenon. Heller likewise analysed the blood in a case of convulsions occurring a few hours after delivery. At the period of the venesection there were symptoms of metro-peritonitis and endometritis. The blood was of a tolerably bright red colour, and separated on coagulation into 587.3 parts of clot, and 412.7 of serum. The specific gravity of the latter was 1026, and it contained a large quantity of bilipheïn. The blood contained, in 1000 parts—

Water	-	-	-	788.20	Blood-corpuscles	-	-	124.07
Solid residue	-	-	-	211.80	Residue of serum	-	-	81.86
Fibrin	-	-	-	5.87				

Two analyses of the blood, in an inflammatory disease of the eye, have been published by Dr. Ayres;\* one previous to salivation, the other during it.

	Blood before Salivation.	Blood after Salivation.
Water	- 776.017	769.109
Fibrin	- 4.636	3.271
Albumen	- 78.806	70.150
Hæmatosine (Blood-corpuscles)	- 129.370	142.600
Crystalline and oily fatty matter	- 1.227	.431
Osmazome	- .989	.890
Albumen combined with soda	- 1.311	1.748
Alkaline salts	- 6.021	5.504
Earthy phosphates	- 1.624	2.293

We observe that on the second venesection there is a diminution in the water, fibrin, albumen, fatty matter, osmazome, and alkaline salts, while the other constituents, especially the blood corpuscles, are increased. Dr. Ayres would render better service to pathological chemistry, by increasing the number, and lessening the minutæ, of his analyses of the blood. Such analyses as those of Lecanu, which have been taken by Dr. Ayres as his standard of comparison, include the separation of several substances, whose determination is of little real value or importance.

13. *Carcinoma medullare colli uteri*. The sanguineous discharge from the uterus of a woman aged 34 years, presenting all the characters of intense anæmia, was analysed by Drs. Lenzberg and Morthier.† It was of a dark red colour, and

\* *Lancet*, Jan. 4, 1845.

† *Archiv*, p. 221.

the separation into clot and serum was not very perfect. There appeared, however, to be about 543 of the former, and 457 of the latter. The blood consisted of—

Water	-	-	-	839.46	Blood-corpuscles	-	-	77.03
Solid constituents	-	-	-	167.53	Residue of serum	-	-	74.06
Fibrin	-	-	-	16.44				

Here we see that there is an enormous increase of fibrin, and a great diminution of the corpuscles, while the residue of the serum remains almost normal.

## II. BLOOD DEFICIENT IN FIBRIN: HYPINOSIS.

29. *Typhoid Fever.* We may remind our readers that Andral and Gavarret, in their elaborate memoir on the blood, assert, the fibrin never rises perceptibly above the normal standard in true typhoid fever, and that it decreases in proportion to the advancement of the disease. Becquerel and Rodier have analysed the blood of 13 persons attacked with typhoid fever; viz., 11 men and 2 women. Of the 11 men, 6 were bled once, and 1 thrice; of the two women, 1 was bled once, and 1 thrice.

The following table exhibits the mean composition of the blood of the male patients, obtained at the first venesection:—

Density of defibrinated blood	1054.4	Fat	-	-	-	-	1.8
of serum	1025.4	Albumen	-	-	-	-	64.8
Water	797.0	Blood-corpuscles	-	-	-	-	127.4
Solid residue	203.0	Extractive matters and salts	-	-	-	-	6.3
Fibrin	2.8						

The salts consisted of—

Chloride of sodium	-	-	2.9	Phosphates	-	-	4.97
Other soluble salts	-	-	2.5	Iron	-	-	5.55

The fibrin varied considerably, the maximum being 4.9, while in three cases it was considerably below the normal standard. The albumen and blood corpuscles were, in most instances, diminished.

Four of the same men were bled a second time, and the following table gives the mean results of the blood obtained in these four cases, on both occasions:—

		1st Venesection.	2nd Venesection.
Density of defibrinated blood	-	1054.0	1051.4
of serum	-	1025.0	1024.7
Water	-	801.0	814.5
Solid constituents	-	199.0	185.5
Fibrin	-	2.3	1.3
Fat	-	1.5	1.4
Albumen	-	64.4	62.0
Blood-corpuscles	-	124.5	113.5
Extractive matters and salts	-	6.0	7.3

The salts consisted of—

Chloride of sodium	-	-	3.6	3.5
Other soluble salts	-	-	2.6	2.7
Phosphates	-	-	5.44	5.55
Iron	-	-	5.81	5.19

A comparison of the two columns shows that the blood obtained by the second venesection contains a considerably smaller mean amount of fibrin than the blood previously taken. The albumen and corpuscles are likewise diminished. The facts collectively are not much influenced, but the cholesterin in the second analysis was found to be much increased.

One man was bled three times. On the last occasion the water was augmented, and the corpuscles were further diminished. The fibrin was not affected, being 2.3 on the first venesection, 2.3 on the second, and 2 on the third. The albumen was not affected, the fats generally were slightly diminished, but the cholesterin rose with each successive bleeding.

The analysis of the blood of the two women offered no peculiarity.

The clot in these analyses differed in respect to size and consistence, but presented none of the softness and diffidence on which the older writers laid so much stress.

Scherer\* has made a partial analysis of the blood in cases of typhoid fever of a very low putrid type.

The blood was black and tar-like, and instead of forming a firm clot, became a soft mass, from which the serum did not separate. The little fibrin it contained was soft and gelatinous. The blood-corpuscles were jagged, and more or less injured: they were smaller than usual, and their nuclei were very distinct.

1000 parts of this blood yielded 176·3 of solid residue, which, on incineration, left 11·92 of fixed salts, consisting of—

Chloride of sodium	-	-	6·82	Carbonate of lime	-	-	0·16
Carbonate of soda	-	-	1·41	Phosphate of lime	-	-	0·60
Sulphate of soda	-	-	0·84	Sulphate of lime	-	-	0·22
Phosphate of soda	-	-	0·94	Peroxide of iron	-	-	0·60

30. *Simple Continued Fever.* The blood in this disease usually exhibits the character of hypinosis. The results obtained by Becquerel and Rodier do not, however, illustrate this character. These chemists analysed the blood of three men and two women suffering from ordinary continued fever. The mean composition of the blood of the three men is given in the following table:—

Density of defibrinated blood	-	1056·8	Fat	-	-	-	1·7
of serum	-	1025·5	Albumen	-	-	-	65·7
Water	-	781·6	Blood-corpuscles	-	-	-	142·4
Solid constituents	-	218·4	Extractive matters and salts	-	-	-	5·8
Fibrin	-	2·8					

Here we see that the fibrin and albumen remain nearly normal, while the blood-corpuscles, instead of diminishing, are slightly above the average, (their numbers being 146, 142, and 138.) The fatty matters and salts offered no peculiarity. They give the following particulars regarding the blood of the two female patients:—

The corpuscles were augmented (135·5) in the first case, normal (125·5) in the second; fibrin normal (1·91) in the first, doubled (3·6) in the second; albumen normal (73 and 70) in both. The serum was turbid in both cases. In the case in which the corpuscles were 125, the clot was firm and resisting; in the other it was soft and diffident.

### 31. *Spanæmia: Poverty of the Blood.*

(1.) *Carcinoma.* In a case of cancer of the left lobe of the liver, and of the pylorus, occurring in a man aged 53 years, Simont† found that the blood contained—

Water	-	-	887·2	Albumen	-	-	55·1
Solid constituents	-	-	112·8	Blood-corpuscles	-	-	45·8
Fibrin	-	-	3·0	Extractive matters and salts	-	-	8·9

The peculiar form of blood is, doubtless, to be attributed to the diseased condition of the principal blood-preparing organs.

(2.) *Chlorosis.* The following table gives the mean composition of the blood of six chlorotic girls, as determined by Becquerel and Rodier:—

Density of defibrinated blood	1045·8	Fat	-	-	-	1·5
of serum	1028·1	Albumen	-	-	-	72·1
Water	828·2	Blood-corpuscles	-	-	-	86·0
Solid constituents	171·8	Extractive matters and salts	-	-	-	8·8
Fibrin	3·4					

The salts consisted of—

\* Untersuchungen, p. 60.

† Beitrage, &c., p. 102.

Chloride of sodium	-	-	3.1	Phosphates	-	-	-	-	441
Other soluble salts	-	-	2.3	Iron	-	-	-	-	319

From this table we perceive that, in chlorosis, the water is much increased, the blood-corpuscles are much diminished, the albumen is very slightly above the normal standard, the fibrin is rather above the healthy average, (in one case it rose to 5,) and the fatty matters and salts are normal. The iron, as usual, diminished with the corpuscles.

The two following analyses were made by Herberger. The blood in (1) was taken from a chlorotic girl, aged 20 years; in (2) it was taken from the same girl after an eight weeks' course of chalybeates.

In both instances the blood formed a tolerably large clot, but no buffy coat.

	1.	2.
Water	869.310	867.080
Solid constituents	131.660	192.920
Fibrin	3.609	1.950
Fat	2.310	2.470
Albumen	78.200	81.509
Globulin	36.470	94.290
Hæmatin	1.590	4.099
Extractive matters and salts	8.921	8.236

The following observations of Andral\* on the blood in chlorosis and other anæmic affections are deserving of an attentive perusal. "There are cases in which the amount of globules falls much below the physiological mean, and, diminishing more and more, reaches a proportion so low, that we can scarcely comprehend how, with so few globules in the blood, life can still be maintained.

"Thus diminution, in different degrees, of the globular element of the blood, is the fundamental character of anæmia; a condition which, therefore, in regard to the composition of the sanguine fluid, as well as in relation to its symptoms, is the opposite of plethora. According to the degree of the diminution of the globules, this condition is still compatible with a certain amount of health, or it becomes by itself a true morbid state, which may exist alone, or intervene as a complication in all diseases. Thus, then, independent of the solids, we find one of the principles of the blood becoming distinct from all the others, exercising, sometimes by its augmentation, and sometimes by its spontaneous diminution, an influence such as to become the point of departure, and the sole appreciable material element of a considerable number of diseases.

"I have found, as the average of the proportion of the globules, in 16 cases of commencing anæmia, the cipher 109; and in 24 cases of confirmed anæmia, the cipher 65. I have constructed these averages only from cases of spontaneous anæmia occurring in the human race: I should have found a lower average in the sheep kind, which are also disposed to become anæmic, and which, in this condition, may have a blood so deficient in globules, that I have seen one of them which had but 15 of those corpuscles; whilst, in the human race, the lowest proportion of globules that I have ever met with in spontaneous anæmia is 28. It is true that man possesses normally in his blood more of the globules than does the sheep species; whence it follows that, proportionally to the physiological condition, the minimum, 28, of globules, found in the spontaneous anæmia of man, is very nearly equal to the minimum, 15, found in anæmic sheep. Besides, it is necessary to distinguish several kinds of anæmia, according to the modifications of composition that they produce in the blood. In spontaneous anæmia, whether strongly marked or not, the globules alone are diminished; the fibrin and the solid matter of the serum have preserved their normal proportions: thus, in 16 cases of slight anæmia, I have found, as the average

\* An Essay on the Blood in Disease, by G. Andral: translated from the French by J. F. Meigs, M.D., and Alfred Stillé, M.D. Philadelphia, 1844.

of fibrin, the cipher 3·0; and in 24 cases of confirmed anæmia, the cipher 3·3.\*

"In the anæmia which follows more or less abundant losses of blood, it may equally happen that we shall find the globules alone diminished; that is, indeed, the first effect of every hemorrhage; but if this augments or is renewed, there soon arrives a moment when the blood comes to lose equally its other principles, and we see the albumen and the fibrin of the serum diminish with the globules. It is in this way that in a woman who had suffered from very abundant attacks of metrorrhagia, the blood contained only 21 in globules, 1·8 in fibrin, and 61 of solid matter of the serum. The water had risen to the large proportion of 915. Anæmia may also be the result of certain inappreciable modifications of the organism which exercise an influence on the blood. In this case, the composition of that fluid appears to be the same as in spontaneous anæmia; that is to say, the globules alone are diminished, while the fibrin and albumen of the serum remain the same. This is what occurs in many pregnant women, whose blood loses its globules without losing its fibrin. The average of the globules is the same in them as we have found it in cases of slight anæmia.

"Why is it that woman is more exposed than man to this singular alteration of the blood, in virtue of which, without any evident cause, the globules of this fluid are thus diminished in so strong a proportion? Why is she particularly exposed to it at a certain epoch of her life?

"Yet men also are sometimes attacked with spontaneous anæmia; they present in such a case all the symptoms which characterize the chlorosis of the female: and I have proved that their blood then suffers the same alteration of composition: it is with them equally the globules alone which diminish; the fibrin and the solid matter of the serum remain the same. I have met with examples of this spontaneous diminution of the globules both in young men, and in others aged from 40 to 60 years. When the influence of lead has acted for a long time upon the human constitution, there may result from it the production of a cachectic condition, very well described by Doctor Tanquerel: I have found that, in this condition, the globules of the blood suffer as great a diminution as in spontaneous anæmia; and, as in this latter, the fibrin and other elements of the blood preserve their normal quantity. This effect of the saturnine intoxication repeated or prolonged is very remarkable. It would be curious to know whether the globules, at the same time that they are diminished in quantity in anæmia, do not become altered also in their structure, and tend to undergo a true destruction. I announced, in my course at the Faculté in 1840-41, the results that some microscopic researches, undertaken with this view, have yielded me. It seemed to me, in two cases of chlorosis, that the globules were become smaller than we generally see them, and at the same time a certain number had no longer their accustomed form; they appeared, in the field of the microscope, as though broken and disseminated, like kinds of fragments. A young girl, who presented me this singular condition of the globules, on the 6th of December, 1840, was perfectly cured two months later; her constitution had even undergone such a metamorphosis, that it had gradually arrived, under our own observation, at a plethoric condition. The 14th February, 1841, I was obliged to bleed her; and her blood then presented me very beautiful globules, extremely different from those I had observed in December.

"These facts seem to me of so much interest and importance, as to make me feel the necessity of seeing them again, before accepting them definitely, and drawing deductions from them. The physical properties of the blood in anæmia

\* The state of the blood of animals shows perfectly to what point the fibrin and the globules may remain isolated in their increase or diminution; thus the dog, whose blood contains much less fibrin than that of man, and of all other animals that I have examined, is precisely the animal whose blood is most rich in globules. On the contrary, the horse, the sheep, the ox, whose blood contains more fibrin than that of man, and especially than that of the dog, have in their blood much less of globules than the two other beings — (See the *Memoire sur la Composition du Sang de quelques Animaux Domestiques*, etc.) Besides in the same species, those individuals who possess in their blood the most globules, are not those whose proportion of fibrin necessarily rises highest, and vice versa.

are very well accounted for by the nature of the changes that it has undergone as to its composition.

"In the most ordinary condition, the one in which the only change undergone consists in a diminution of its globules, the blood presents to the naked eye the following appearance:—supposing it to have flowed freely, we find in the vessel which has received it a small clot, which swells in the midst of an abundant and perfectly colourless serosity. This clot, far from being soft, as we might have expected, is, on the contrary, remarkable for its density; its molecules retain a strong power of cohesion, and it is not at all uncommon to find on its surface a very characteristic buff; one might take it for pleuritic blood, or for that of an acute articular rheumatism. This density of the clot and the buff which covers it, are the more marked in proportion as the anæmia is more considerable. The existence of cupped blood in anæmia is not a new fact in science. Borsieri, amongst others, had noticed the presence of the buff in the blood of chlorotic patients; and he had, with good reason, drawn from this an argument against those who pretended that this crust was always the necessary indication of a phlegmasia: and it is curious to find that Tommasini, who had also seen the coagulum of the blood of chlorotic patients become covered with a buffy coat, would not for that abandon the principle sustained by him, that there is no buff in the blood without inflammation; for, said he, chlorosis is nothing more than a chronic angiotia. Such an assertion does not even require refutation.\*

"I regard, as incontestable, the fact, that the clot of the blood of chlorotic patients is often buffed; and, like Borsieri, I have from this long since drawn the inference that the presence of the buff is not always evidence of the existence of an inflammatory disease, for chlorosis is certainly not of this character. But why is the blood in this disease often cupped? It is because the blood of chlorotic patients has retained all its fibrin, and lost some of its globules:—is it in consequence of this that there is really in this blood, as in that of inflammation, or as exists normally in the blood of some animals, excess of fibrin in proportion to the globules? Now, whenever this excess takes place, whether it be absolute or relative, and whenever, at the same time, the coagulation of the fibrin is not very much too rapid, this principle will be seen to accumulate alone on the surface of the clot, and the cup will appear. This is the reason why the blood of anæmic individuals may be buffed, and why plethoric individuals' is not. It is the cause, also, why the coagulum of blood is firmer and more dense in the first than in the last. It is also one of the circumstances which explains the constant existence of the buff in the blood of the horse. We must add to this, in the latter animal, the greater slowness of the coagulation of the fibrin. . . . There is a phenomenon revealed to us by auscultation, which constantly coincides with a certain diminution of the globules; this is the singular bellows-sound heard in the heart, and especially in the arteries, in all cases of anæmia, however slight. For its manifestation, it is necessary that the impoverishment of the blood should have fallen upon the globules; it is not present when the fibrin alone has been diminished; so that I have never met with it in scorbutic patients, unless they had reached that period at which the globules, at first unaffected, yield in their turn. Neither have I met with this *bruit de souffle*, in the cases which will be detailed farther on, where the impoverishment of the blood is owing particularly to a diminution of the albumen of the serum. Remark, in addition, what the analysis of 88 cases in which this *bruit* existed in the carotid arteries, either continuously or intermittently, has taught me, in regard to the relation to be established between the diminution of the globules of the blood, and the appearance of the bellows-sound in the arteries.

"Of these 88 cases, there were 56 in which the *souffle* was continuous, and 32 in which it was intermittent. Of the 56 cases in which the *bruit da souffle* was continuous, and represented what M. Bouillaud has called the *bruit de diable*, I found 28 in which the cipher of the globules had not risen above 80, and had fallen even to 21; I found 13 in which the cipher varied between 80 and 100; 10

\* Tommasini sull' Infiammazione, t. xi. p. 260, l. 278.

where it had risen from 100 to 115; and 5, again, where from 115 it had increased even up to 123.

"Of the 32 cases in which the *bruit de souffle* was merely intermittent, there were only 3 below 80 in globules, (76, 77, 77;) 13 from 80 to 100; 8 from 100 to 115; 8 others from 115 to 126. We see then that the *bruit de souffle* of the arteries does not always show itself with the same degree of diminution of the cipher of the globules, in different individuals; there are, nevertheless, some rules to be established in regard to this, such as the following:—

"1. When the globules are so much diminished as to be below the cipher 80, the *bruit de souffle* exists in the arteries as a constant condition. I have not found a single exception to this law.

"2. When the globules remain above this cipher 80, the *bruit de souffle* may still show itself, but it is no longer constant. We continue to hear it not unfrequently while the cipher of the globules oscillates between 80 and 100; it is still heard, but much less frequently, in proportion as the cipher of the globules passes 100; and finally, is no longer observed, at least as dependent upon an alteration in the blood, when the cipher of the globules has risen above its physiological mean.

"Whatever be in other respects the nature of the disease in which the diminution of the globules exists, the *bruit de souffle* of the carotids does not the less show itself. I have verified it in the most opposite cases; in putrid fevers, in eruptive fevers, pneumonia, acute articular rheumatism, and in a great number of chronic diseases. But in all these cases it occurred only in connexion with the cipher of the globules above indicated.

"The *bruit de souffle* shows itself sufficiently often in pregnant women, which is in relation with the frequent diminution that the globules undergo in them.

"The intensity of the bellows-sound is commonly subordinate to the degree of diminution of the cipher of the globules.

"Thus, in 22 cases of chlorosis, I have found the intermittent *souffle* eight times, the cipher of the globules oscillating between 117 and 77; and the continuous *souffle* fourteen times, the cipher of the globules varying from 113 to 28."

Bequerel and Rodier analysed the blood of two girls in whom all the symptoms of chlorosis existed (including the *bruit de diable* in the carotids,) and yet there was no diminution of the corpuscles, or of the solid constituents generally.

	1st Case.	2nd Case.
Density of defibrinated blood.....	1155.4	1055.4
— of serum.....	1027.9	1027.2
Water.....	798.6	792.7
Solid constituents.....	201.4	207.3
Fibrin.....	2.9	2.3
Fat.....	1.297	1.980
Albumen.....	66.8	70.5
Blood-corpuscles.....	123.8	126.4
Extractive matters and free salts.....	6.6	5.8

The salts obtained by venesection consisted of—

Chloride of sodium.....	2.6	2.9
Other soluble salts.....	2.2	3.4
Phosphates.....	.329	.427
Iron.....	.492	.516

(3.) *Purpura hæmorrhagica*. The blood has been analysed in a case of this disease by Routier. In 1000 parts he found—

Water.....	795.244	Blood-corpuscles.....	121.701
Solid constituents.....	204.756	Residue of serum.....	83.405
Fibrin.....	0.905		

### 32. *Fourth Form of Diseased Blood ; Heterochymeusis.*

#### (1.) Blood containing urea.

a. *Morbus Brightii*. Although, in the following analyses, Becquerel and Rodier failed in detecting urea in the blood, we have not deemed that a sufficient reason for removing this disease from the present category.

A young man aged 22, a gardener, was attacked for the second time with oedema, of the lower extremities, which he attributed to excessive work, to cold, and wet, and which he observed twelve days before he entered the hospital. At this period there was considerable debility, general anasarca, and a slow pulse, 52 in the minute. There was no apparent derangement of the nervous system, or of the digestive organs. The urine was highly albuminous, and became consistent on the addition of an acid. The first venesection was ordered on his admittance; the second six days afterwards, in consequence of a slight febrile reaction, for which no cause could be assigned.

In the blood drawn on the first occasion there was a slight decrease of the corpuscles (129,) a marked diminution of the albumen (58.) The fibrin was nearly normal (2.65:) the fatty matters were abundant, (2.673,) consisting of serolin .05, phosphorized fat .943, cholesterin .589, and saponified fat 1.059. The salts offered no peculiarity: the serum was abundant, rather limpid, and of a yellowish-red colour: the clot was rather large and firm, and of an uniform colour. The blood taken at the second venesection exhibited a very considerable diminution of the corpuscles (97), and a much greater decrease in the albumen (51.8:); fibrin and fatty matters nearly normal, being 2.8 and 1.56 respectively.

β. In the peculiar form of fever that occurred in Edinburgh two years ago, there was a considerable amount of urea detected in the blood.\*

γ. Many observers have detected urea in the blood of persons suffering from cholera. An additional case has been lately recorded by Heller.†

The blood was collected from the carotids after death. It was fluid, with the exception of some coagula of fibrin in the heart and larger vessels. It was very dark coloured, and of very thick consistence. Under the microscope the blood-corpuscles were observed to be jagged at the edges, and more or less injured, and numerous fat-vesicles were visible. The amount of fibrin was very small; albumen and fat appeared to be in excess. There was a large amount of urea in the blood, in consequence of the torpidity of the urinary secretion. The fixed salts, especially the chlorides, were increased for the same reason.

#### (2.) *Cholamia: Bile, or its Constituents in the Blood.*

Becquerel and Rodier observe that icterus may exist under two perfectly distinct conditions: there may be a continuous and increased secretion and flow of bile, or there may be a perfect retention arising from biliary calculi, &c.

In the first case no peculiar modification is observable in the blood, and it is therefore unnecessary to quote their analyses: in the second case there is an accumulation of cholesterin and of the other fatty matters of the blood. The following analysis was made of the blood of a young man, aged 23 years, in whom icterus was developed as a consequence of indigestion. There was constipation, and no appearance of bile in the feces. The blood contained, in 1000 parts—

Water .....	740.509	Albumen .....	66.300
Solid constituents .....	259.491	Blood-corpuscles .....	164.300
Fibrin .....	1.900	Extractive matters and salts .....	23.345
Fat .....	3.646		

The fatty matters (amounting to more than double the normal quantity) consisted of—

Serolin .....	0.070	Cholesterin .....	0.627
Phosphorized fat .....	0.810	Saponified fat .....	2.333

\* Taylor on the Blood, &c., Med. Gaz., p. 175.

† Archiv, vol. i. p. 14.



The fatty acids that enter into the composition of the saponified fat occur in the bile combined with soda. The salts were normal. In another case of a similar nature the fat amounted to 4·176, consisting of—

Serolin.....	0·128	Cholesterin.....	0·556
Saponified fat .....	1·159	Saponified fat.....	2·333

In addition to the large amount of fat in the blood in these cases, Becquerel and Rodier observed that the serum was always tinged with bile-pigment.

Enderlin\* states that he has twice detected choleate of soda (pure bile) in the blood. The particulars of the cases are not recorded.

(3.) *Piærhæmia: Fat in the Blood.* A remarkable instance of this form of morbid blood has been already recorded. See *Peritonitis*.

(4.) *Animalcules in the Blood.* Dr. Goodfellow has lately recorded a case in which an immense number of animalcules was found in the blood of a fever-patient. They varied in length from 1-5000th to 1-3000th of an inch; and in diameter, which was the same throughout, from 1-40,000th to 1-30,000th of an inch. Gruby and Delafond have described a peculiar animalcule, of frequent occurrence, in the blood of the dog; and Mayer, in his "*Dissertatio de Organo Electrico et de Hematozois, Bonn, 1843*," enumerates the following animalcules as occurring in the blood:—(1) *Paramœcium loricatum seu costatum* in frogs; and (2) *Amœba rotatoria* in fishes.

33. *On the Menstrual Discharge.* Rindskopf† analysed the menstrual discharge of a vigorous and healthy girl. It was extremely acid, and contained:—

	1st Analysis.		2nd Analysis.
Water .....	820·830	Water .....	891·892
Solid residue .....	179·170	Albumen and hæmatoglobulin	156·457
Salts .....	10·150	Extractive matters and salts .	20·651

Vogel‡ analysed the menstrual discharge in a case of prolapsed uterus. It was of an intensely red colour, thick, and viscid; it did not coagulate, but, after standing for some time, a colourless serum separated. The fluid obtained at the commencement of the flux yielded 83·9 parts of water, and 16·1 of solid materials: and that obtained near the termination yielded 83·7 of water, and 16·3 of solid materials. The serum contained 93·53 parts of water, and 6·47 of solids, of which 0·64 were fixed salts.

No one who has carefully studied this secretion can doubt that fibrin is generally present. Its determination is, however, often impossible, in consequence of the vaginal mucus preventing the coagulation of the blood.

In the corresponding secretion in the mare, we succeeded in obtaining 4·3 parts of fibrin from 36 grains of the clotted portion of the discharge §.

34. *Lochial Discharge.* Scherer has carefully investigated this subject. The following is a summary of his results:—

During the first day the discharge was of a brownish-red colour, viscid, and formed no coagulum; but, when collected in a vessel, threw down a slimy deposit, consisting of normal blood-corpuscles, with which a few partially dissolved and broken-up corpuscles, together with mucus-corpuscles, and epithelium scales were interspersed. The supernatant serum was clear and yellow, and the microscope revealed in it a large amount of fat-vesicles. It was devoid of odour, perfectly neutral, and contained, in 1000 parts—

Water	740	Solid constituents	260
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On the second day there were still blood-corpuscles, but they were fewer and less perfect, most of them being irregular and indented at the edges: there were

\* *Annalen der Chemie und der Pharm.*, 1844.

† *Casati's Jahrbuch*, 1344.

‡ *Ibid.*

§ On the theory of Menstruation, by G. F. Gray, M.D., *Fen. Lancet*, Dec 7, 1844. An essay of a very high physiological character, and containing many original observations.

mucus-corpuscles and epithelium scales, but in less number than on the preceding day. The fluid still deposited a viscid sediment, but the serum was more highly coloured than on the previous day. The re-action was neutral; there was a faint odour. 1000 parts consisted of—

Water . . . . 812.2 | Solid constituents . . 187.8

The residue, on incineration, yielded 9.35 of alkaline ferruginous ash.

On the third day the secretion resembled arterial blood. The blood-corpuscles were, for the most part, perfect, and normal mucus-corpuscles were observed. In 1000 parts there were—

Water . . . . 760 | Solid constituents . . 240

The ash amounted to 12.2. There was an appreciable quantity of fibrin in this day's secretion, arising, possibly, from a slight hemorrhagic effusion.

On the fourth day the secretion was of a dirty brown colour, the corpuscles were more or less injured, and there was a distinct odour of ammonia. There were numerous mucus-corpuscles, but no epithelium.

1000 parts yielded 191 of solid residue, and 9.5 of alkaline salts.

On the fifth day the discharge was of a greenish-yellow colour. It contained very few blood-corpuscles, most of which were more or less injured, but numerous mucus-corpuscles, arranged in groups of 5—10 together. The reaction of the fluid was alkaline; there was a strong odour of ammonia, and 1000 parts yielded 9.35 of solid residue.

On the sixth day the fluid was of a brown colour, smelled like putrid cheese, and developed ammonia freely. 1000 parts contained 76 of solid residue.

For other analyses, and further information on this subject, the reader is referred to Scherer's "*Chemische und Mikroskopische Untersuchungen zur Pathologie*," Heidelberg, 1843.

35. *On the Passage of Metallic Salts, &c., into the Blood* Kramer\* has made some experiments on this subject. He examined the blood and the urine of patients and of animals, after the use of nitrate of potash, hydriodate of potash, chlorate of potash, chloride of barium, tartarised antimony, sulphuret of mercury, chloride of silver, nitrate of silver, carbonate of iron, sulphate of iron, and iron rust. All these, without exception, were detected in the blood and in the urine, with the exception of the chloride of silver, in which case silver was found in the blood, but not in the urine.

M. Cesterlent† has made a number of experiments for the purpose of ascertaining whether metallic mercury, when rubbed on the skin, and given internally in a state of fine division, enters the body in a metallic state. For this purpose he both rubbed mercurial ointment on the shaved skins of animals, and administered a certain quantity of the metal internally. In both cases, he found globules of mercury, from the 250th to the 1000th of a line in diameter, in the blood. The mucous contents of the colon also contained distinct globules of mercury. Metallic globules were also detected in the mesenteric glands, in the liver, spleen, lungs, kidney, in the bile, and in the urine; they were also found in the cavities of the heart. The author also states, that he detected metallic globules in the saliva and urine of a woman who was salivated by mercury. From his experiments he concludes that, in general, small quantities of mercury, introduced by friction or by the stomach, are thrown out of the system by means of the urinary and biliary secretions.

M. Audouard‡ has examined the saliva and urine of persons taking chloride of mercury, and in both liquids obtained the metal. He remarks, that Orfila's method of saturating the fluid with chlorine gas, precipitating the mercury on copper slips, and separating it from them by distillation, gives the most accurate results.

\* *Revue Scientif. et Industr.*, xiv. p. 34; and Berzelius's Report, &c., French edit., 1845, p. 374.

† *L'Experience*, 1st Aug. 1844; and *Edin. Med. and Surg. Journal*, Oct. 1844.

‡ *Journal de Chim. Med.*, ix. p. 137; and Berzelius's Report, p. 374.

Heller\* relates cases in which he discovered iodine and bromine in the blood, urine, saliva, nasal mucus, tears, &c., of syphilitic patients, to whom those remedies were being administered. He likewise records a case† in which he sought unsuccessfully for silver in the blood of an epileptic patient to whom nitrate of silver had been administered for five weeks, in doses varying from 1 to 3 grains daily. A critique upon his analysis may be found in the Lond. Med. Gaz., May 15, 1845.

36. *Lymph.* Nasse‡ has recently analysed the lymph collected from the absorbent vessels of the neck of a horse. He obtained, in 1000 parts—

Water .....	950.000	
Solid residue .....	50.000	
Albumen, with fibrin .....	39.111	
Water-extract .....	3.248	
Spirit-extract .....	0.877	
Alcohol-extract .....	0.755	
Ethereal extract .....	0.088	
Oleate of soda .....	0.575	} 5.611
Carbonate of soda .....	0.560	
Phosphate of soda .....	0.120	
Sulphate of potash .....	0.233	
Chloride of sodium .....	4.123	} 0.310
Carbonate of lime .....	0.104	
Phosphate of lime, with some iron .....	0.095	
Carbonate of magnesia .....	0.044	
Silica .....	0.067	

It yielded no microscopic indications of urea. Nasse compared the lymph with the serum from the blood of a healthy horse, and found a remarkable coincidence in the salts of the two fluids.

	Serum.	Lymph.
Alkaline chlorides - - -	4.055	4.123
Alkaline carbonates§ - - -	1.130	1.135
Alkaline sulphates - - -	0.311	0.233
Alkaline phosphates - - -	0.115	0.120
	<hr/> 5.611	<hr/> 5.611

The lymph, therefore, is a dilute serum; and the salts of the blood which make their escape along with the colourless *liquor sanguinis* from the capillaries, either return again, in the same proportions to each other as they were secreted, into the capillaries; or, which is most probable, they only penetrate into the lymphatic vessels. Besides there being more water in the lymph than in the serum (in the ratio of 950 to 922,) the two fluids differ in the ratio of their solid constituents to the salts: in the lymph, the salts amount to 11.22, and in the serum to 9.65‡ of the solid residue. It is, probably, this circumstance that causes the much greater viscosity of the serum, which is by no means solely dependent on the larger quantity of albumen in solution.

37. *Chyle.* Nasse|| has instituted the following analysis of the chyle of the cat. It contained, in 1000 parts—

\* Archiv für physiologische und pathologische Chemie und Mikroskopie, vol. i. pp. 30, 38.

† Op. at page 9.

‡ Wagner's Handwörterbuch der Physiologie, art. Lymph, vol. ii. 1845.

§ The oleate of soda is calculated as a carbonate.

|| Wagner's Handwörterbuch, &c., art. Chyle, vol. i.

Water	-	-	-	905.7	Chloride of sodium	-	-	7.1
Solid constituents	-	-	-	94.3	Other soluble salts	-	-	2.3
Fibrin	-	-	-	1.3	Iron	-	-	traces
Fat	-	-	-	32.7	Earthy salts	-	-	2.0
Albumen, blood-corpuscles, and extractive matters	-	-	-	48.9				

#### § IV.—Secretion.

The following observations on the chemical laws that govern secretion are worthy of attention. They are extracted from the "Chemistry of Vegetable and Animal Physiology" of Mulder.

"It is a property of the chemical forces which are active in any substances to excite analogous forces in others. We notice this especially in organic nature, and it is nowhere more strikingly illustrated than in the nutrition of animals. Blood, a homogeneous fluid, circulates through very different parts of the body. In the muscles it sustains muscles; in the liver it supplies the component parts of the liver, and from it the bile is there secreted; in the kidneys it maintains their various parts, and secretes the urine, &c. None of these secretions appear in the blood with their peculiar qualities; of some there is not even a trace found in it. But the four organic elements of the whole are to be found in protein and its modifications, in the colouring matter of the blood, &c. The elements of the protein might no doubt be transposed to the liver, &c., by means of catalysis, and so the component parts of the liver and bile be produced from it. It would only be necessary then that the constituent parts of the liver should be put in contact with the component parts of the blood, and the forces of affinity resident in the substance of the liver would not require to influence those in the protein, or to produce any chemical alterations in its component parts. Other changes, however, ought undoubtedly to be considered. For instance, a change in its component parts takes place in the liver itself, and, from the first, chemical forces actively operate therein: for a continual change of its component parts is a chief characteristic of every living organic substance. These forces may disturb the chemical equilibrium of other substances, and cause the formation of new products. If the constituents of the blood, the combinations of protein, the colouring matter, &c., enter the liver when it is in a state of action, and are there put in contact with the bile during its secretion, and with the substance of the liver itself, which is in a state of continual alteration, then the result will be, that this change of their component parts having taken place, the action will be transferred to the elements of the blood, and will maintain the secretion. If, on the other hand, the constituents of the blood are in a continual change, then the circle of action in which they are involved will extend to the mass of the liver, and so with every organ.

"We have, however, no more knowledge of the manner in which this secretion originally commences—whether it proceeds from the blood, or from the secreting organ, or whether each of these contributes its part, than with the manner in which the first germ of the whole organ, the liver, is produced, or in which the germ of the animal is converted into the animal. But the continuance of the action—the duration of secretion—entirely corresponds with some other phenomena which we may observe separately, and which therefore throw light upon these animal actions. This is the case especially with fermentation, from which Liebig has drawn many illustrations, for the purpose of clearly exhibiting his ideas; and with the same view we shall also avail ourselves of the same process. Yeast changes sugar into carbonic acid and alcohol, and is at the same time changed itself. The latter change causes the former, and is only transferred to the sugar. If we substitute blood for yeast, and the liver for sugar, we may form an idea, more or less, of the secretion of the bile. The component parts of the blood are continually undergoing change. This constant change of the component parts in organic bodies is a chief cause of the continuation of their existence. The liver, without intermission, assumes new parts, and loses

others. This process we call nutrition. At the same time that the parts of the blood in the substance of the liver are thus undergoing change, chemical forces are excited; these forces are transferred to the elements of the blood, and so are enabled to produce from them the bile. This takes place the more easily, as the blood itself is also in a state of continual alteration, and thus readily yields to the impulse which, in some way or other, is communicated to it. As the impulse varies so does the effect. Hence that great diversity in the secretion of very dissimilar substances which are in a state of alteration, from the same fluid, that is, the blood, which is itself at the same time in a state of decomposition. From the nutrition of the cellular texture, however, which must be produced from the component parts of blood, and from the nutrition of all the secreting organs—which, besides producing the secretion, maintain themselves by separating what they require from the constituents of the blood—we learn that catalysis cannot be left out of consideration in the mere process of nutrition. Further, we must apply the same principle to all the solid parts of the body which are compounds of protein. The muscles, for instance, have the property of secreting protein from the blood, and converting it into fibrin; on the other hand, when protein is deficient in the blood, this fibrin is taken from the muscles, and converted into blood-protein, as in cases of long continuance and in emaciation. Muscles have thus the property of forming muscle-fibrin by simple contact, if protein abounds in the blood; and this result can be ascribed only to a cause similar to that by which crystals gradually accumulate from solutions of salts. It is at least a peculiar action, different from ordinary chemical action, which takes place when the plasma of blood is transformed into muscles, which in composition do not essentially differ from the plasma. The same is the case with the production of hair, nails, and permanent bones.”\*

#### § V.—*The Fluids connected with the Chylopoietic Viscera, and Digestion.*

38. *Saliva.* Enderlin† has made numerous analyses of the ash left after the incineration of the saliva, and has always found them to have the same constituents. He considers that its alkaline reaction is due to the tribasic phosphate of soda ( $3 \text{ NaO}, \text{PO}_5$ ) which retains the mucus, and protein-compounds in solution. Enderlin observes that independently of conclusions deduced from the ash, he has sought unsuccessfully, in a direct manner, for lactates in the saliva. On incinerating salivary mucus obtained by washing that constituent from a filter, the residue is found to consist of phosphate of lime with traces of chloride of sodium and phosphate of soda, the same composition as the tartar that collects on the teeth.

A quantitative analysis of the ash obtained from a large quantity of saliva obtained from different persons, yielded the following results:—

A. <i>Constituents soluble in water.</i>		
Tribasic phosphate of soda ( $3 \text{ NaO}, \text{PO}_5$ ).....	28.193	} 93.367
Chlorides of sodium and potassium.....	61.930	
Sulphate of soda.....	2.315	
B. <i>Constituents insoluble in water.</i>		
Phosphate of lime .....		} 5.509
“       magnesia.....		
“       peroxide of iron.....		

He conceives that the large amount of soluble salts, (especially of tribasic phosphate of soda,) as well as the occurrence of phosphate of iron in the saliva, indicate that the saliva takes an active part both in the chemistry of digestion and in the formation of blood.

Donni‡ observes in regard to the saliva that, “as it occurs in the mouth, it is not a simple fluid; it is always mixed with a larger or smaller amount of buccal

\* Versuch einer Allgem. Phys. und Patholog. Chemie, p. 27; or Fromberg's English Translation, pp 38-40

† Liebig, Annalen, 1844, p. 3 and 4.

‡ Cours de Microscopie, p. 209.

mucus, and it is to this circumstance that we must attribute the great diversity of opinions that has been expressed respecting the chemical reaction of that fluid. In its normal state, saliva is alkaline, but the secretion of the mucous membrane of the mouth is acid, and thus the reaction of the saliva may be masked by that of the mucus. For instance, when there is much mucus in the mouth as occurs in some persons on waking, the reaction is acid; if, on the other hand, the mouth be rinsed and the flow of saliva stimulated by mastication, the reaction is alkaline in healthy persons. . . . . Instead of being alkaline, the saliva may be neutral or faintly acid; this is especially the case in affections of the stomach and intestinal canal. I have observed it acid in patients with gastritis, and in children with aphthæ. As the health becomes established, the saliva regains its alkalinity. In a normal state the evaporation of a drop of saliva gives rise to a beautiful crystalline arrangement, similar in form to hydrochlorate of ammoniac. By means of this characteristic an excellent observer, M. Lebailliff is able to tell his morning visitors whether they have breakfasted or not: for the morning saliva, before its secretion has been excited by eating is mixed with a large number of epithelium scales which hinder the elegant and regular formation of the crystals."

39. *Bile.* The chemistry of the bile remains, as it has long done, in a most unsatisfactory state of confusion. Demarcay, in the year 1838, published an elaborate paper on this subject, in which he showed that the old opinion that the bile is a soda-salt, is, after all, correct, and that the essential constituents are an oily acid, which he terms *choleic*, and soda which exists in a state of combination with it. The subject has since been investigated by Berzelius and Liebig. The former chemist regards *bilin*, a neutral constituent, as the essential and most important ingredient, while the latter supports Demarcay's views with some trifling modifications. The following analysis of ox-gall will give some idea of this fluid according to Berzelius\* :—

Water .....	928·380
Solid constituents .....	71 620
Bilin .....	50 000
Chloride of sodium, lactate of soda, and extractive matter } soluble in alcohol..... }	15·000
Alkaline sulphates and phosphates and extractive matter } insoluble in alcohol .....	4·334
Cholesterin.....	·001
Mucus.....	2 350

The following observations on the recent progress of the knowledge regarding the bile are taken almost *verbatim* from the report of Berzelius for the year 1844, and it must not be forgotten that this is one of those disputed points on which Liebig and Berzelius hold very strong opposite opinions.

"Dr. Kemp has communicated some experiments which appear to have been made in Liebig's laboratory, and their object seems to be to prove that the bile is principally composed of a mere simple solution of a salt of soda, the acid of which he terms *bilic acid*. His experiments consist in separating, by means of alcohol and ether, the mucus, the fat, and the salts insoluble in alcohol; in evaporating to dryness, and in determining the carbon and hydrogen by combustion. In this manner he obtained 58·46—58·8% of carbon and 8·3—8·81% of hydrogen, and by incineration in an open crucible 11·16% of carbonate of soda, and 0·54% of chloride of sodium. Subtracting the chloride of sodium and the soda, there remain 64·85% of carbon and 9·4% of hydrogen. In other analyses he found 3·4—3·7% of nitrogen. He asks "What is this bilic acid? Is it not the bilin of Berzelius, for carbonic acid does not separate the soda; he convinces himself of this fact by passing a current of carbonic acid through an alcoholic solution of the combination of this acid with soda, and not obtaining a precipitate of carbonate of soda. It is not the biliary resin of Thénard, for it is soluble in water. It

\* Wagner's Handwörterbuch der Physiologie, 1842. Art. Gallë.

is not Demarçay's choleic acid, for that is precipitated from a solution of its soda-salt by acids, even by weak vegetable acids. Dr. Kemp endeavours to refute my idea respecting the sweet taste of bilin (I attribute it to the glycerin produced by the saponification of the fat contained in the bile,) by submitting it to dry distillation, without detecting the odour of acrolein amongst the products of distillation. He seems to have forgotten that the acrolein must of necessity have been decomposed by the ammonia simultaneously developed, and that consequently a small amount of acrolein would escape observation.

"If it were asked, what light have these experiments of Dr. Kemp thrown on the composition of the bile? we could only reply that he had determined the proportions of carbon, hydrogen, and nitrogen, in that portion of the bile which is soluble in alcohol, and from which ether had removed everything soluble in that menstruum; but he gives us no idea of the nature of that portion, whether it is a simple substance or a mixture of various ingredients.

"Liebig has published a memoir on the bile, based on these experiments, and he arrives at a conclusion very analogous to that of Dr. Kemp, that the bile is principally formed of a single acid, *bilic acid*, in combination with soda; but he differs from Dr. Kemp in this respect, that he considers this bilic acid as identical with Demarçay's choleic and my bilifellinic acid. In order to prepare this acid, he recommends that 1 part of effloresced oxalic acid should be dissolved, with the assistance of heat, in an alcoholic solution of 8 parts of dry bile, from which the colouring matter has been previously removed by animal charcoal. Immediately on the dissolution of the oxalic acid, minute crystals of oxalate of soda begin to separate, and their quantity increases on cooling. As soon as it ceases to deposit crystals, the liquid is filtered, diluted with water, and digested with carbonate of lead, until there is no longer any reaction of oxalic acid. The lead is removed by means of sulphuretted hydrogen, and the filtered solution is evaporated to dryness on the water-bath. The residue is bilic acid. This substance may also be obtained by dissolving bile in cold absolute alcohol, and saturating with dry hydrochloric acid gas. The whole of the soda of the bile may be considered as separated when no further crystalline precipitate results on mixing with ether. After the separation of the salt, the greater portion of the hydrochloric acid is expelled by evaporation on the water-bath.

"On the addition of water, the residue separates into two distinct strata, one aqueous and very acid from the hydrochloric acid, while the other (the lower) is thick, and contains bilic acid. This bilic acid is dissolved in alcohol, and finely powdered oxide of lead is gradually added to the solution, until the liquid indicates a faint excess of lead. The fluid is then filtered, and, after the separation of the lead by sulphuretted hydrogen, is evaporated to dryness.

"Now, in the first of these experiments, Liebig neglects all the constituents of the bile insoluble in alcohol; in the second he overlooks the action of warm hydrochloric acid on the elements of the bile, and that it gives origin to hydrochlorate of ammonia, taurin, and resinous acids. This is the body which, according to Liebig, is combined with soda in the bile, and constitutes the essential and characteristic element of that secretion. He has not examined whether the oxide of lead will convert it into a plastic-like compound and bilin, and whether he could thus obtain fellinic and cholinic acid in the manner that I have described.

"As far as my own experiments on ox-bile are concerned,—Liebig asserts that the substance termed by me bilin is merely bilate of soda; that the sulphuric acid which I make use of does not separate all the soda contained in the bile, and consequently that the substance not precipitated by oxide of lead is bilate of soda. When a certain quantity of bilin is separated, and after the removal of the oxide of lead and of the acid, we may extract fellinic acid from the latter, and reduce the residue which is insoluble in ether into ordinary bilifellinic acid. On this point Liebig remarks that 'the substance termed fellinic acid by Berzelius appears to be nothing else than a mixture or combination with bilic acid,' and he adds that 'cholic and bilicholic acid, bilicholinic and bilifellinic acids, fellanic and cholanic acids, do not refer to peculiar well-characterized bodies, but only

represent certain changes which the organic portion of the bile has undergone by decomposition.

"The bilin that remains in solution after the bile has been precipitated by subacetate of lead, is, according to Liebig, merely bilate of lead dissolved in an excess of subacetate of lead, &c.

"M. Berlin, of Stockholm, who visited the Giessen laboratory last year, brought me back a specimen of bilic acid. By means of ether, I extracted from it traces of cholesterin, and of fellinic acid, which were easily separated by means of carbonate of soda. I then dissolved the acid in water, and precipitated it by sulphuric acid; the acid then assumed the form of a thick faintly yellow syrup, while some white flocculi remained in suspension, which were collected on a filter, and proved to consist of one of the resinous pulverulent acids. The quantity in my possession was too small to admit of a complete examination; but, judging from the solution of these white flocks in a weak solution of carbonate of soda, to which they communicated a bitter taste, I conclude that they were cholic acid. This bilic acid, moreover, contained soda, which remained in combination with the sulphuric acid in an acid solution.

"On precipitating the bilic acid with sulphuric acid, redissolving in water, and treating it with oxide of lead, I obtained a plaster-like combination of lead, and bilin in solution. After evaporation, I obtained a residue of clear and colourless bilin, whose aqueous solution yielded no precipitation, either with sulphuric or hydrochloric acid. Ultimately, the bilin underwent its ordinary metamorphoses, and its solution contained ammonia and taurin.

"On treating the plaster-like compound of lead with ether, I obtained fellinic and cholinic acids; the residue was bilifellinic acid, which admitted of similar decomposition.

"From Dr. Kemp's analysis, Liebig concludes that bilic acid is identical with Demarçay's choleic acid. Dr. Kemp maintains that in this Liebig is committing an error at his expense, for which, when he publishes his further researches on the bile, he will call him to 'a severe account.'

MM. Theyer and Schlosser have subsequently published an account of some new researches on the bile, which were made in the Giessen laboratory, and confirm the accuracy of Liebig's previous conclusions.

They terminate their memoir with the conclusion, that the picromel of Thénard, the bilic acid of Kemp, the biliary sugar of Gmelin, the choleic acid of Demarçay, and my bilifellinic acid with bilin, (supposing the latter to be free from an alkali,) are one and the same substance.

"Now I would ask these young chemists (who have so well obeyed their master's orders in endeavouring to prove that I have described one and the same body under two different names, as if it were really formed of two distinct substances,) what light they can throw on the following points.

"I would inquire, 1st, if fresh filtered bile, from which the mucus has been previously thrown down by acetic acid, and to which sulphuric acid diluted with an equal weight of water has been added, without any precipitation of bilic acid, after twelve or even twenty-four hours, (whatever quantity of acid may have been added; if, I say, such bile can be precipitated by subacetate of lead, without a considerable portion of Thénard's picromel or Gmelin's biliary sugar escaping precipitation, and remaining in solution. For my own part, I feel assured that no bile of this nature has been examined in the Giessen laboratory; and before we attempt to form conclusions regarding the composition of the bile, as it exists in the living body, we ought, at any rate, to employ fresh bile in our analyses.

"2d. When they have precipitated their bile acid from its aqueous solution by sulphuric acid, and have thoroughly purified it from all extraneous matters, I would ask them to introduce the acid as a solid and minutely divided, into a flask containing ether, and to examine it, in the course of twelve or twenty-four hours, the ether is not divided into two distinct portions,—one of which is fluid, while the other forms a thick syrup. This being granted, to distil the



ether, to examine the residue, and then to see (according to my method) whether the ether has not extracted bilic acid, as well as fellinic and cholinic acids.

"3d. Let them dissolve in water the portion insoluble in ether, add a little carbonate of lead, so as to saturate any retained sulphuric acid, and then heat the solution on the water-bath, with finely-powdered litharge, which must be added in small portions as long as it agglutinates. When, after the lapse of a quarter of an hour or half an hour, the last portion is found not agglutinated, let them filter, evaporate to dryness, dissolve in anhydrous alcohol, again evaporate, and then see if the limpid and colourless matter which constitutes the residue, and which I call bilin, is bilate of soda. For this purpose, let them dissolve the residue in water, and mix the solution with sulphuric acid diluted with its own weight of water, or with hydrochloric acid; let them see whether the bilic acid is precipitated, its distinguishing character being that it is insoluble in acids but soluble in water; let them digest the acid solution for some hours at 140° and 180°, decant it from the deposited bilic acid, and examine whether the liquid does not contain ammonia and taurin—two bodies that are inevitably produced during the metamorphosis of bilin into bilic acid.

"4th. Let them separate, by one of the known methods, the bilic acid from the plaster-like compound of lead, and examine whether, by submitting this acid to similar treatment, they cannot obtain the same products; and, finally, let them publish to the world the results at which they arrive."

In an essay on the bile, by Platner, published in Müller's *Archiv*, No. 2, 1844, and translated in the *Chemical Gazette*, vol. ii, p. 515, it is shown that the bilic acid and acid bilate of soda, may be procured in a crystalline state. In a subsequent communication by the same chemist, after correcting certain errors in his first paper, he proceeds to show that two distinct substances are met with in perfectly fresh bile:—"I have been able," he observes, "to cause bile, which was evaporated in a water-bath, and freed from mucus and the greater part of its salts by repeated solution in alcohol, to crystallize immediately. For this purpose nothing further is necessary than to add ether repeatedly to as strong an alcoholic solution of the bile as possible, and then to set it aside in a cool place. The principal and most important constituent of the bile then crystallizes, in the same manner as in my former experiments; but  $\frac{1}{2}$ — $\frac{1}{3}$  of the bile used does not crystallize, but remains as a yellowish-brown syrupy liquid. I have not been able to succeed in separating this in any manner from the crystals; consequently, I can say nothing more concerning its nature. It is, however, evidently a different substance from the principal constituent of the bile, perhaps even a product of its decomposition. The decomposition of the bile begins even in the organism, and it is impossible to examine fresh bile which is not partly decomposed. The brown liquid appears to consist principally of biliary colouring matter. I must, however, remark that the crystals have also a slightly yellow tint. By this new observation my former communications are confirmed. The principal constituent of bile is a compound of soda with a peculiar organic body, and this compound may be immediately procured from the bile without its undergoing any important alteration. Liebig called this compound *bilate* of soda; I have denominated it *choline-soda*. It does not appear to me sufficiently proved, that the principal organic constituent of bile is positively an acid. It is possible that, like albumen, it may combine with acids as well as with bases. The most recent examinations of the bile by Berzelius would then be partly true. Further experiments must decide this. These, however, are peculiarly difficult, because in separating the bile from soda, an acid body may undoubtedly be formed. From the above observation, it is further evident that the formula advanced by Liebig for bilic acid must be incorrect; for Kemp, Theyer, and Schlosser have not analysed the essential biliary ingredient in a perfectly pure state, but have always at the same time included the brown syrupy fluid. Finally, it is evident from these communications, that in precipitating bile by metallic salts, different precipitates must always form, as Gmelin supposes, and that Liebig is in error when he opposes

\* Rapport Annuel sur les Progrès de la Chimie, 1845, pp. 337-332.

this view. I thus conclude, believing that the disputations concerning the bile may be considered as settled, at least on the main point."

We have already had occasion to mention *laurin* as one of the products of decomposition of the bile when digested with hydrochloric acid. The formula that has been generally accepted as representing its composition, is  $C_4H_7NO_{10}$ , but Redtenbacher has recently stated that it contains  $25\frac{1}{4}$  of sulphur.

Lehmann had previously asserted that he had always found sulphur in bilin, but did not attempt a quantitative analysis.

**40 Morbid Bile.** The bile of a man who died in a state of icterus, was examined by Scherer. It was of a blackish-green colour, formed a thick fluid, and exhibited under the microscope a large number of black pigment cells. It contained, in 1000 parts—

Water.....	859.6	Fat.....	8.6
Solid constituents.....	140.4	Bile-pigment.....	44.3
Bilin.....	48.6	Salts.....	8.0
Bilifellinic acid.....	30.5		

Not a trace of cholesterin could be discovered in the fat. Scherer seems to regard its absence as singular; but Berzelius, although he places it amongst the biliary constituents, states that it amounts to only  $\cdot 0001\frac{1}{2}$  in healthy bile—a quantity easily overlooked. The bile-pigment imponderable in healthy bile; its amount, as well as that of the solid constituents generally, is enormous.

**41. On the Composition and Properties of Biliary Colouring Matter.** Scherer\* has made some analyses of the colouring matter of the bile collected from the urine of a patient suffering from jaundice. The fresh urine, after filtration, was treated with chloride of barium. The green precipitate was washed with water, thrown on a filter, and the colouring matter separated from it by two separate methods.

(1.) The precipitate was boiled in water with carbonate of soda, and the resulting yellow solution filtered and decomposed by muriatic acid. The colouring matter which is almost insoluble in the acid liquid, was then placed on a filter, and dissolved in a mixture of two parts of alcohol and one of ether, in order to separate it from any uric acid that might have been thrown down with it and the beautiful dark green solution evaporated. The colouring matter adhered to the sides of the porcelain capsule, in the form of a dark green mass which by slow evaporation was completely dried and then easily pulverized. This powder was washed with distilled water as long as any muriatic acid could be detected by nitrate of silver.

(2.) Another and simpler method is this:—The baryta precipitate was at once decomposed by digestion with alcohol and muriatic acid at a gentle heat; the alcoholic solution was evaporated, washed on a filter with water, then dissolved in a mixture of alcohol and ether, and again evaporated.

The colouring matter obtained by either process, and washed with distilled water to remove the muriatic acid, forms a very beautiful dark green powder, almost insoluble in water, readily soluble in alcohol and spirit, but with some difficulty in pure ether. If a little caustic or carbonated alkali be added to the water it is dissolved in large quantity and the fluid acquires a colour varying from green to brown; it is also more soluble in water containing alkaline salts than in distilled water. When digested for some time with muriatic acid, the green colour is gradually converted into a blackish brown; this also occurs when it is gently heated for some time with alkalies. In both cases it is rendered less soluble in alcohol, becomes somewhat more soluble in water, and at the same time also loses the property of yielding the characteristic alterations of colour with nitric acid.

On combustion with chromate of lead the colouring matter yielded—

\* *Annalen der Chem. and Pharm.*, March 1845, and *Chemical Gazette*, No. 62.

	By the first process.		By the second process.
	1	2	
Carbon .....	67.409	67.761	68.182
Hydrogen .....	7.692	7.598	7.437
Nitrogen .....	6.704	6.704	7.074
Oxygen .....	18.195	17.937	17.261

In order to ascertain what alterations this colouring matter underwent by the slow action of the air, acids, and alkalis, one portion was treated with excess of muriatic acid, and the other with an excess of carbonate of soda and a little caustic potash, and kept for 14 days in shallow open vessels at a temperature of about 90°, whereupon it underwent the change of colour already mentioned. It was then reobtained from the first process.

100 parts contained	Digested with acid.	Digested with alkali.
Carbon ..	61.837	62.086
Hydrogen ..	6.464	6.567
Nitrogen ..	9.080	7.101
Oxygen ..	22.619	24.246

Hence it appears that the biliary colouring matter loses a considerable amount of carbonic acid and hydrogen. Scherer shows by other analyses that the colouring matter in black, easily-powdered gall-stones which contain but little cholesterin approaches closely in composition to that which is formed by treating the ordinary colouring matter with acids or alkalis, and exposing it to the air. Moreover, in addition to this pigment, which forms the greater part of the smaller biliary calculi, they contain another, probably richer in carbon and hydrogen, and more closely resembling the normal colouring matter.

42. *On a new Test for Bile and Sugar.* By Dr. Pettenkofer. "The author remarked that when ox-gall had been treated with sugar, and concentrated sulphuric acid was added until the precipitated choleic acid had begun to redissolve, the mixture became considerably heated, and the liquor assumed a deep violet tint, similar to that of hypermanganate of potash. It was first considered that this remarkable alteration might depend upon the decomposition of the biliary colouring matter; but it was found equally to occur, nay even more evidently, with the bile which had been decolorized, and with pure bilin obtained by Berzelius's method. All the attempts to separate the new product in an isolated state have hitherto completely failed. The author consequently confines his observations to the application of this phenomenon as a test (a) for bile (choleic acid,) and (b) for sugar. The following is the method of proceeding:—A small quantity of the liquid supposed to contain the bile (if the substance be solid it must be treated with alcohol, and the solution evaporated,) is poured into a test-tube, and two-thirds of the volume of sulphuric acid added by drops. The heat of the mixture must be kept below 144° Fahr, otherwise the choleic acid will be decomposed. From 2 to 5 drops of a solution of 1 part of cane-sugar to 4.5 of water are now added, and the mixture shaken. If choleic acid be present, the violet-red colour will appear more or less distinctly according to the quantity present. The following precautions are however requisite to be attended to:—1st. The temperature must not exceed that mentioned to any extent, otherwise the colour, although formed, will be again destroyed. 2d.—The quantity of sugar must not be too large, because the colour of the sulphuric solution will become dark brown, and sulphurous acid will be formed, whereby the violet-red colour may be concealed or destroyed. 3rd.—The sulphuric acid must be free from sulphurous acid. 4th. If the fluid contain albumen, it is best to coagulate this previously, since albuminous solutions, although only when very concentrated and when heated with sugar and sulphuric acid, produce a similar colour. It could not be produced with mucous, nor with dilute albuminous solutions, which were always altered to a brown colour. 5th.—A great excess of chlorides, although such is rarely found in ani-

mal bodies, converted by the colour to a brownish red. 6th.—If the bile be in a very small quantity, the fluid should be carefully concentrated on the water-bath, extracted with alcohol, this also evaporated to a small volume, and the test applied to the cold solution. Sometimes an interval of several minutes is required for the production of the colour, especially when the sulphuric acid is added very slowly, and consequently a lower temperature is generated. In liquids, where the bile is in very small quantity, as in urine and other secretions, the author has found it requisite to make a spirituous extract, to evaporate this nearly to dryness on the water-bath, and then to transfer the moist residue into a watch-glass. When quite cold, sulphuric acid and a very small quantity of syrup are added, so that the temperature of the solution remains low. In the course of a few minutes, if the most minute trace of bile is present, the colour is produced. In this reaction, grape-sugar, starch, or in fact any substance which is convertible into grape sugar by sulphuric acid, may be substituted for cane sugar. The same result was obtained with the bile of man, the fox, dog, ox, pig, fowl, frog and carp. The author concludes from this, that the bile of all the Vertebrata agrees chemically in containing choleic acid combined with soda.

By means of this test the author detected bile in the urine of a patient afflicted with pneumonia. The feces of a healthy man, when extracted with spirit and treated as above, did not yield the slightest reaction, whilst on adding a little bile previously to the feces it was perfectly developed. In the stools produced by calomel, several observers have remarked that the green or yellowish green colour is converted into red by treating them with mineral acids; by applying the sugar and acid, the same phenomena are produced. In all cases of diarræa, bile is found in the stools. The author imagines that the alterative effects of purgatives might be thus explained by their carrying off the bile as fast as it is secreted, consequently preventing its absorption.

Concentrated muriatic acid heated with bile and sugar, likewise produces a red colour, but this is much lighter and less beautiful than with sulphuric acid.

This test may also be adopted for the detection of sugar. If sugar be suspected in a liquid, urine for instance, an aqueous solution of ordinary ox-gall is gradually treated with sulphuric acid, until the precipitated choleic acid is again redissolved; the suspected urine is then added, whereupon the violet-red colour is produced. As the quantity of sugar present is usually small, it is best previously to concentrate it. To detect bile in blood, the albumen is first separated by ebullition with spirit, and the concentrated fluid treated as above. If this test is used for sugar, the absence of starch must be previously proved by iodine.

The author thinks his test better than Trommer's in the examination of blood and urine, both because it acts more rapidly and delicately, and because its action is uninterrupted by the ammoniacal salts of the urine, the free ammonia of which retains the proto- and per-oxides of copper in solution until it is completely expelled by boiling, whereby the reduction of the oxide of copper may be readily effected by other substances. Pure manna and gall, when treated as above described, afford no trace of the peculiar reaction. It is thus easy to detect grape-sugar in manna.\*

43. *On the Functions of the Bile.* That the bile is not merely an excrementitious fluid, intended to remove the effete matters from the blood, but that it is a secretion essential to the animal economy, was rendered almost certain by the experiments of Berzelius, Thayer, and Schlosser, which showed that the human feces contained much too small a quantity of a substance resembling bile to justify the idea that it is evacuated in this matter. Schwann has recently established this opinion beyond a doubt, by a series of well-devised experiments on dogs. He tied the ductus choledochus, and at the same time formed a fistulous opening in the gall-bladder, by which the bile escaped externally. His most important conclusions are, 1st, That when the bile does not get into the bowel, its absence is generally perceptible in dogs, about the third day, by a marked diminution in weight; and, 2dly, That unless the channel for the conveyance of

\* Ann. der Chem. und Pharm., Oct. 1844, and Chemical Gazette.

bile to the duodenum is re-established, symptoms of deficient nutrition, wasting, debility, &c, ensue, and death is the ultimate consequence.

A paper, containing some very ingenious speculations on this subject, was read before the British Association at their last meeting at York, by Dr. Kemp, a chemist well known for his ultimate analysis of the bile. Dr. Kemp commences by a reference to the fact that the food both of graminivorous and carnivorous animals consists essentially of two portions, the one adapted to the formation of nitrogenized, the other for the formation of the non-nitrogenized portions of the animal frame. Albumen and starch may be taken as types of these two classes. The chyle must represent the sum of the albumen and starch, (regarded as types,) after having undergone certain changes necessary for assimilation, and these changes in the case of the albumen are known to be very trifling. If, therefore, the formula for albumen or protein (for in a certain sense they may be regarded as identical) be deducted from the formula for chyle, the difference will represent the body into which the food typified by starch has been changed by digestion. Now  $C_{44}H_{42}N_2O_{21}$  (chyle) —  $C_{40}H_{31}N_2O_{13}$  (protein) =  $C_{18}H_{12}O_8$ , while the formula for starch is  $C_{12}H_{10}O_{10}$ . Dr. Kemp explains this difference (which has evidently taken place during digestion) in the following manner. He shows that, by the mere action of oxygen on the elements of the bile and starch, the result is a body represented by the formula  $C_{18}H_{12}O_8$ , which is the non-nitrogenous portion of the chyle. The organic portion of ox-bile may be represented by the formula  $C_{42}H_{42}NO_{13}$ ,\* and by the action of nitric acid on this body, we deprive it of the elements of ammonia, and obtain  $C_{42}H_{30}O_{14}$ , which may be put in the form  $4(C_{12}H_{12}O_4) + 7H_2O$ . But  $C_{12}H_{12}O_4 + 2eq. starch = C_2H_2O_2 + C_{14}H_{20}O_8 = 2(C_{12}H_{12}O_4) + 2H_2O$ . The coincidence in the formulæ is very singular; the view must, however, be regarded as merely hypothetical at present.

44. *The Gastric Fluid, its Nature and Properties.* M. Blondlot has recently published, in Paris, a Treatise on Digestion, detailing very numerous experiments made upon a dog, in which a fistulous opening into the stomach was maintained for upwards of two years. The gastric juice was obtained in very large quantities. Submitted to distillation, the fluid passing over did not exhibit the slightest acid re-action, whilst the residue in the retort was always strongly acid. It is therefore certain that the acid of the gastric fluid is neither hydrochloric nor acetic acid, since both these are volatile. The gastric fluid of other animals gave the same result, on being distilled. When chalk or any other carbonate of lime is added, no effervescence ensues, which further proves the acid not to be the lactic. M. Blondlot concludes that the acid re-action of healthy gastric juice is owing to the presence of superphosphate and biphosphate of lime. He adds—1st. That there is no other acid which can remain acid, and fail to decompose carbonate of lime. 2d. That sulphuric acid, added to gastric juice, precipitates an abundance of sulphate of lime, and oxalic acid precipitates oxalate of lime. 3d. Potash, soda, ammonia, and lime water, produce abundant precipitates of neutral phosphate of lime. 4th. That calcined ash of gastric juice is not deliquescent, dissolves without effervescence in hydrochloric acid, forming chloride of calcium; it therefore contains neutral phosphate of lime, the excess of acid being drawn off in the calcination.

M. Blondlot also made many experiments to determine whether, during digestion in the healthy stomach, lactic acid is formed by the transformation of sugar, starch, or other substance, and his conclusion is, that it is never found. He could never find even a trace of it, although he analysed the fluid expressed from the contents of the stomach, after remaining in the stomach various periods. He conceives that the acid of the gastric juice prevents the lactic acid fermentation, just as other acids are known to do under other circumstances. In confirmation of this, M. Blondlot relates many experiments upon birds and ruminating animals, which show that the formation of lactic acid in these creatures takes place only in those parts of the alimentary canals where no acid is present—namely, in the crop of birds, the first and second stomach of ruminants, and the cæcum of man,

\* This is the formula deduced by Kemp from his own analyses.

and other animals. He first proves that the acid found in these cavities is not secreted by their walls. Feeding sheep, goats, chickens, and pigeons, on food destitute of sugar, and examining the fluid found in the cavities mentioned, he found it invariably alkaline. On the other hand, the addition of sugar to the food produced an acid fluid in the same cavities which proved to be the lactic. The contents of the cæcum are not more acid than those of the small intestines, except sugar has been taken in the food; but when sugar has been taken, it undergoes the lactic fermentation in the cæcum. These experiments agree with those of Mr. Ross, published in the *Lancet* for January 20 and February 10, 1844. Tiedemann and Gmelin found an acid in the crop of a pigeon, which had fed for several days on nothing but meat; but this, as M. Blondlot shows, probably had regurgitated from the stomach—an incident requiring precautions to prevent, after death.

M. Blondlot believes that the digestive property of gastric juice depends, not on its obvious chemical constitution, but upon a peculiar organic principle. If exposed to a temperature of  $104^{\circ}$  to  $122^{\circ}$  Fahr., or higher, it loses entirely and irrevocably its digestive powers, although, to all appearance, and even as to its composition, as made known by analysis, it remains unchanged. With the exclusion of the air, gastric juice may be kept for two years without loss of its activity; but with the free access of air, it putrifies in five or six days, although the chyme which it forms from nitrogenous organic substances may be preserved for two or three months without change. The precipitation of all the lime it contains does not affect its activity, nor are its chlorides indispensable, but whatever acts upon its organic constituents, heat, strong alcohol, or strong acids, or which removes them, such as animal charcoal, chlorine, tannic acid, or acetate of lead, destroys all its digestive properties.

M. Blondlot also shows—*a.* That coagulated albumen resists the action of the gastric juice only from its compact form. When coagulated in very small particles, as white of an egg beaten into a froth and poured into boiling water, it is digested as quickly as soft fibrine. *b.* That the action of the stomach in coagulating milk is not due to its digestive principle solely, but to its acid, which acts like lactic acid. *c.* The effect of the gastric fluid upon bones, whether entire or not, is to disintegrate the matter slowly, beginning at the surface, and to reduce the earthy matter into a fine chalky powder, but without dissolving or decomposing it. The earthy matter not being dissolved, proves that no hydrochloric acid has acted upon it; it is all discharged with the fæces.

The physiological results of M. Blondlot's experiments confirm those of M. Beaumont, which are already familiar to our readers.

Since the work of M. Blondlot was published, two other French chemists, MM. C. Bernard and C. Barreswil have made an experimental investigation into the properties of the gastric juice. They start with the assumption that this fluid owes its digestive properties to the union of two principles: 1st, an acid; 2d, a peculiar organic matter destructible by heat. What is the nature of the acid? "The principal fact which has been adduced to prove that the acid reaction is owing to the presence of biphosphate of lime is, that it may be treated with carbonate of lime without effervescence. Our experiments show that this arises from the dilution of the acid, which allows the carbonic acid to be dissolved as it is formed. When, therefore, the gastric juice is concentrated, it causes a considerable effervescence with chalk. Moreover, gastric juice dissolves neutral phosphate of lime, whilst this salt is entirely insoluble in solution of the biphosphate." On distilling gastric juice, the first distillate exhibits no acid reaction. If a mere trace of acetic acid or acetate of soda is added, and afterwards distilled, it gives an acid reaction; the normal acid is not therefore acetic. This also appeared, at first sight, to prove it could not be hydrochloric acid; but on distilling water rendered slightly acid by hydrochloric acid, nothing passes over at first but pure water, the acid not distilling until the end of the operation. On distilling gastric juice, a neutral limpid liquor passes over, which does not precipitate with nitrate of silver; but when about four fifths has distilled over, the distillate is

perceptibly acid, yet, nevertheless, it does not render a solution of nitrate of silver turbid; but, at the end, and when only a few drops of the gastric juice remain in the retort, an acid liquid passes over which precipitates salts of silver; this is, doubtless, hydrochloric acid. Does this acid exist free in gastric juice, or has a chloride been decomposed in this operation? When the least trace of oxalic acid is added to gastric juice which we know contains lime, a turbidity is produced from the formation of an insoluble oxalate of lime; but if to water acidified with 2000ths of its amount of hydrochloric acid, and containing chloride of lime, the same re-agent be added, no turbidity ensues. This clearly proves that hydrochloric acid exists as a chloride in the gastric juice, and not in a free state.

When concentrated by evaporation, gastric juice is strongly acid, effervescing with chalk, and not losing its acid reaction in the presence of an excess of the chalk. This proves the presence of *phosphoric acid*. On saturating the acid with lime and oxide of zinc, and filtering the solution, the neutral filtrate contains both zinc and lime, therefore the phosphoric acid is not the only free acid in the juice. What is the acid combined with the zinc and lime in the filtered solution? It is one which, as we have seen, passes over at the end of the distillation, and does not precipitate salts of silver. These characters belong to lactic acid. On distilling water slightly acidulated with lactic acid, and a small quantity of chloride of sodium added, it presents a complete analogy to gastric juice; first, pure water passes over, then an acid which does not precipitate salts of silver, and the last drops carry over hydrochloric acid. So that it is evident that the presence of hydrochloric acid in the last product of distillation of the gastric juice is owing to the decomposition of the chlorides by lactic acid.

Hydrochloric acid cannot exist in a free state in presence of a lactate, a phosphate, or an acetate. "We have observed," say the authors, "in the acid of the gastric juice all the characters of lactic acid, as pointed out by M. Pelouze; both give soluble salts of lime, barytes, zinc, and copper, a double salt of copper and lime, deeper in colour than the simple salt, a salt of lime soluble in alcohol, precipitated by ether." From the above facts, MM. Bernard and Barreswil conclude that the acid reaction of the gastric juice is not owing to biphosphate of lime, but arises from a free acid, which is not hydrochloric acid or acetic acid. They have always found lactic acid, with a minute proportion of phosphoric acid, the latter being a product of the reaction of the lactic acid on the phosphates present. According to their opinion, lactic acid is a constant production of the stomach. They do not mean to say that the digestive powers of the gastric juice are owing to the lactic acid; on the contrary, they think if an acid reaction be indispensable other acids may supply its place, because among the various salts constantly introduced into the stomach with the food, some will have their acid replaced by the free lactic of the stomach, and the new acid liberated may supply the place of the normal acid.

M. Melsens\* has also examined the gastric juice, and denies the accuracy of Blondlot's experiments.

45. *Transformations of the Sugar in Food.* M. Chossat† found that of many birds fed on sugar alone, none lived more than sixteen days; and he thought he observed that in those which had copious bilious evacuations, no unusual quantity of fat was accumulated in the body; but in those in which these discharges did not occur, fat was abundantly formed. He assumed, therefore, that the sugar is, under varying circumstances, sometimes converted into the constituents of fat, and sometimes into those of bile. But the experiments of M. Letellier,‡ which were more carefully made, contradict these. Their results were, that among seven turtle-doves fed on cane-sugar and bread with water (coagulated albumen having been added, in two cases, after the sixth day,) not one possessed, at the time of death, the average quantity of fat; their general ave-

\* Journal de Pharmacie, Jan. 1845.

† Gazette Médicale, 21 Oct. 1843, from the Académie des Sciences, séance du 16 Oct.

‡ Annales de Chimie et de Physique, Juin, and Annales des Sciences Naturelles, Juillet 1844.

rage of fat was nearly 60 per cent. less than that found in healthy individuals, i. e., the average in health was found to be 15·8 per cent., and in those fed on sugar only 6·3. Yet the fæcal evacuations had been in most cases moderate. But the sugar, though it did not increase the fat, served towards maintaining the temperature of the body, and the average production of carbonic acid. The quantity produced by these birds, on ordinary diet, was 13·2 grains per hour; during seven days' starvation, it was 6·65 grains per hour, and during three days' diet of sugar 11·08 grains. In turtle-doves fed for six days on butter, the quantity of fat found after death was scarcely more than in those who had died on the diet of sugar without albumen; and the quantity of carbonic acid produced by them was 9·08 grains per hour. And to these evidences of the transformation of saccharine into fatty substances, it may be added that butyric acid may be formed in the fermentation of sugar,\* and that M. Avequin† has noticed, that the quantity of that cystalline wax which forms on the exterior of the sugarcane (and which he has named cerosia,) always bears an inverse proportion to the quantity of sugar within the cane.

M. M. Bouchardat and Sandras fed some dogs for several days on sugar. After their death, sugar more or less modified was detected in every portion of the intestinal canal. In one part, it was found as ordinary sugar, in another, as "sucre interverti," and in another as lactic acid. The urine, blood, chyle, and bile of these dogs contained traces of "sucre interverti" and of lactic acid. In order that the sugar should thoroughly disappear in the blood, they conceive that it must be first changed into sugar of grapes and lactic acid in the intestinal canal; the ultimate products of the decomposition being water and carbonic acid.‡

46. Enderlin§ has carefully examined the contents of the various portions of the intestinal tube of the hare.

\* *Annalen der Chemie und Pharmacie*, Oct. 1843.

† In *Mukder's Physiol. Heilkunde*, p. 271, and Mr. Paget's Report on the Progress of Physiology.

‡ *Journal de Pharmacie et de Chimie*, March 1845.

§ *Liebig's Annalen*, 1844.



### A. Contents of Stomach.

A green, firm, very acid, mass, yielding on incineration a copious, faintly alkaline ash, containing no carbonates, and a very small amount of soluble salts.

100 parts of the ash contained,

93.50 insol. ( $3\text{CaO}$ ,  $\text{PO}_4$ , and  $\text{CaO}$ ,  $\text{SO}_3$ ), and  
6.50 sol. salts ( $3\text{NaO}$ ,  $\text{PO}_4$ , and  $\text{Cl}$ ,  $\text{Na}$ .)

The amount of  $\text{PO}_4$  in the soluble salts = 0.833%.

### D. Contents of Cecum.

A dark green, consistent, very alkaline mass, with a fecal odour, yielding on incineration a copious, white ash, containing a small proportion of soluble salts, and no carbonates.

100 parts of the ash contained,  
73.90 insol. ( $3\text{CaO}$ ,  $\text{PO}_4$ , and  $\text{CaO}$ ,  $\text{SO}_3$ ), and  
26.10 sol. salts ( $3\text{NaO}$ ,  $\text{PO}_4$ ,  $\text{NaO}$ ,  $\text{SO}_3$ , &  $\text{Cl}$ ,  $\text{Na}$ .)  
The amount of  $\text{PO}_4$  in the soluble salts = 3.894%.

### B. Contents of Duodenum.

A creamy, caseous, yellow, alkaline mass, yielding on incineration a small, white, fused, effervescing, and very alkaline ash, containing a large amount of soluble salts, including carbonates.

100 parts of the ash contained,

14.63 insol. ( $3\text{CaO}$ ,  $\text{PO}_4$ , and  $\text{CaO}$ ,  $\text{SO}_3$ ), and  
85.37 sol. salts ( $3\text{NaO}$ ,  $\text{PO}_4$ , &  $\text{NaO}$ ,  $\text{CO}_2$  abundant,  
 $\text{NaO}$ ,  $\text{SO}_3$ , and  $\text{Cl}$ ,  $\text{Na}$ .)

The amount of  $\text{PO}_4$  in the soluble salts = 30.490%.

### E. Contents of Colon.

A dark green alkaline mass, yielding on incineration a copious gray ash, containing a very small proportion of soluble salts, and no carbonates.

100 parts of the ash contained,  
94.15 insol.  $3\text{CaO}$ ,  $\text{PO}_4$ , and  $\text{CaO}$ ,  $\text{SO}_3$ ),  
5.85 sol. salts ( $3\text{NaO}$ ,  $\text{PO}_4$ ,  $\text{NaO}$ ,  $\text{SO}_3$ , &  $\text{Cl}$ ,  $\text{Na}$ .)  
The amount of  $\text{PO}_4$  in the soluble salts = 0.380%.

### C. Contents of Small Intestine.

A yellowish green, semifluid alkaline mass, yielding on incineration a small, white, very alkaline ash, containing a large proportion of soluble salts, but no carbonates.

100 parts of the ash contained,

9.412 insol. ( $3\text{CaO}$ ,  $\text{PO}_4$ , and  $\text{CaO}$ ,  $\text{SO}_3$ ),  
90.588 sol. salts ( $3\text{NaO}$ ,  $\text{PO}_4$ ,  $\text{NaO}$ ,  $\text{SO}_3$ ,  $\text{Cl}$ ,  
 $\text{Na}$ .)

The amount of  $\text{PO}_4$  in the sol. salts = 19.790%.

The salts of the Blood and Liver were likewise examined.

100 parts of the ash of the blood contained,

15.536 insoluble,  
84.464 soluble salts.

The amount of  $\text{PO}_4$  in the soluble salts = 5.930%.

100 parts of the ash of the liver contained,

14.706 insoluble,  
85.294 soluble salts.

The amount of  $\text{PO}_4$  in the soluble salts = 21.333%.

It is worthy of remark that the ash yielded by the contents of the duodenum alone effervesces, and consequently contains an alkaline carbonate. Enderlin asks if this may not be regarded as a proof of the correctness of Liebig's opinion that the choleate of soda, (which yields the carbonate on incineration), is perfectly absorbed.

47. *Milk.* Haidlen\* has recently proposed a new method for analysing milk. It consists in coagulating the milk by gypsum, by which means the error in the determination of the casein that resulted from all former methods, is avoided.

When milk is stirred with about one fourth of its weight of finely-pulverized gypsum, and heated to  $212^{\circ}$ , it is entirely coagulated; and when the whole is then evaporated to dryness, a brittle mass is obtained, which is easily reducible to powder. From this powder the butter may be extracted by ether; the sugar of milk and soluble salts may be removed by hot alcohol of 0.85; while the caseate and sulphate of lime, and insoluble salts, remain undissolved. The alcoholic solution scarcely exhibits any perceptible opacity on the addition of chloride of barium, showing that no error in the result is occasioned by any of the gypsum being taken up by the alcohol.

About 100 grains of gypsum and four times its weight of milk, answer very well. The soluble salts extracted from the milk by the alcohol may easily be determined by incineration; and since their amount is to that of the insoluble salts in the average proportion of 5 to 7, the amount of the latter may at least be found approximately, and the ascertained weight of the sugar and casein corrected accordingly. But if it is desired to determine the salts with perfect accuracy, it is best to incinerate a weighed quantity of milk, and to analyse the residue. By the above process he obtained the following results, in 100 parts:—

	Milk of Cow.	Milk of Woman.	Milk of a Sickly Woman.
Butter - - - -	3	13	3.4
Sugar of milk - - -	46	82	43
Casein and insoluble salts - -	51	27	31

Two analyses of the ashes obtained from the milk of two different cows gave, for 100 parts of milk—

	1st.	2d.
Phosphate of lime - - - -	.251	.344
Phosphate of magnesia - - -	.042	.064
Phosphate of peroxide of iron - -	.007	.007
Chloride of potassium - - - -	.144	.183
Chloride of sodium - - - -	.024	.084
Soda - - - -	.042	.045
	<u>.490</u>	<u>.677</u>

Dr Schlossberger has published an analysis of milk obtained from a male goat. After noticing the previously recorded cases of milk being yielded by the mammary gland of the male, he describes the case that fell under his own observation in the following terms:—

"Last summer, a buck, furnishing milk, was found in the Neuhoef estate, near Giessen, and by the kind invitation of Professor Liebig, the author having had a desirable opportunity afforded to him of making an accurate investigation, was enabled to decide upon the subject in question.

"The above-mentioned buck was four years of age, and so late as last autumn, he gave satisfactory proofs of his male sex; the testes and the penis were examined by Dr. Bardeleben and myself, and found to be of the normal size and development; it was the same with regard to the horns. The two dugs occupied the place in which they usually are met with in bucks, and were of the size of a fist. With some force, which, as it appears to me, occasioned some painful sensation, a liquid resembling milk could be expressed, the quantity of which seemed to be rather inconsiderable; but the animal frequently most eagerly sucking its dugs, it was difficult to obtain considerable quantities of the secreted

\* Simon's *Beitrag*, p. 258, and *Rapport Annuel*, &c. p. 258.

liquid, I am, however, indebted to the kindness of the proprietor, Mr. Firhaber, for several ounces of it.

"The fresh liquid, obtained by frequent milking was, throughout, of the colour, consistence, and taste of good milk; and, what is the more remarkable, notwithstanding the vicinity of the fetid organs, no unpleasant odour or taste was noticed. Under the microscope numerous butter globules appeared, the great majority of which were isolated, and singly moved freely one over another; but after the secretion was observed for at least four weeks, rather solid agglomerations of globules were found therein (apparently quite of the same nature as the isolated ones,) a species of *corpus granuleux* (granular body) discovered by Donné in the *colostrum*; by ether these likewise disappeared. In addition to this, some cells of epithelia were mixed with it (perhaps accidentally.) The reaction of the milk was scarcely alkaline; on standing for some time, it deposited a considerable quantity of cream; it showed, however, no great inclination for becoming acid.

6.771 grammes of milk on being incinerated, left 0.053 grammes of almost pure white ashes; hence, 0.782 per cent. In 100 parts of these ashes were 41.6 insoluble in water, and 58.4 salts soluble in water, such as are usually met with in milk. To determine the other constituents of the milk quantitatively, the method recommended by Haidlen was adopted. 17.800 of milk, on being heated with 3.204 gypsum, and dried at 212° F., left 5.858 of solid residue, in which, therefore, 2.654 of solid parts of milk corresponded to 14.91 per cent. 5.514 grammes solid residue (containing gypsum,) on being extracted by ether, left 5.136; hence 2.12 parts of the solid constituents of milk (the gypsum being subtracted) yielded 0.378 butter. From the residue (5.136) exhausted by ether, alcohol, extracted *sugar of milk and salts*, and it weighed after this extraction 4.766; hence we calculate 0.370 sugar of milk and salts soluble in alcohol, for 2.12 solid constituent parts of milk. That which remained, still combined with the gypsum, consisted of casein and salts soluble in alcohol, amounting to 1.376 for 2.12 solid constituent parts of milk.

"100 parts of buck's milk, therefore, contain—

"85.09 water.

"14.91 solid constituent parts (containing 0.782 fixed salts.)

"In 100 parts of the solid constituent parts are:—

"17.83 butter.

"17.45 sugar of milk and salts soluble in alcohol.

"64.71 casein and salts insoluble in alcohol.

"In 100 parts of the buck's milk are consequently—

"85.09 water.

"9.66 casein (with salts.)

"2.60 sugar of milk (with salts.)

"2.65 butter.

"The alcoholic extract of the milk was then investigated solely with reference to its contents in sugar of milk, its presence was clearly proved by sulphate of copper and potassa, and in various other ways.

"On comparing the results obtained here with the analyses of milk known hitherto, it appears that buck's milk is remarkable for its *richness in casein*; whereas it is proportionately poorer in butter and sugar of milk, than, for instance, cow's milk; it manifestly approaches nearest to the milk of goats, the analyses of which were made some time back, and when the methods adopted were probably rather imperfect.

"Goat's milk contains, namely in 100 parts\*—

	According to Boysson.	Luiscius.	John
Casein.....	5.29	9.13	10.54
Butter.....	2.99	4.56	1.17
Sugar of milk.....	2.07	4.37	2.34
Water.....	89.28	81.93	84.93

\* Vide Burdach's *Physiology*, vol. iii. p. 148.

"The case of formation of milk in an animal belonging decidedly to the male sex, is perhaps, likewise of some importance for the theory of secretion; it seems to prove the independence of the formation of milk of a peculiar (puerperalis) syncrasy of the blood proper to the pregnant or newly-delivered female animal, confirming the view that the *development of an organ of secretion* is of an unequally higher importance to the production of a specific secretion than a certain syncrasy of the blood. The elements producing milk are present in the blood of both male and female: on the existence of the glands depends the transformation into milk. Or must we suppose that even in male animals furnishing milk a puerperal syncrasy of the blood takes place, a property of the blood of which the medical man, rather than the chemist, might form a clear conception."

48. *Mucus and Pus.* Nasse has published the following analysis of fresh pulmonary mucus:—

	1.	2. Dried residue.
Water.....	955.590	
Solid residue.....	44.480	
Mucin with a little albumen .....	23.754	53.405
Water-extract .....	8.006	18.000
Alcohol-extract.....	1.810	4.070
Fat.....	2.887	2.490
Chloride of sodium .....	5.825	13.095
Sulphate of soda .....	0.400	0.880
Carbonate of soda .....	0.198	0.465
Phosphate of soda .....	0.080	0.180
Phosphate of potash with traces of iron .....	0.974	2.190
Carbonate of potash .....	0.291	0.655
Silica and sulphate of potash .....	0.255	0.570

In the determination of his salts Nasse seems to have overlooked the circumstance that sulphate of soda cannot occur in fluids containing either carbonate or phosphate of potash.

Several analyses of pus have been made by Dr. Wright.\* The three following analyses will serve as specimens.

	Pus from a vomica.	Pus from a pectoral abscess.	Pus from a mammary abscess.
Water.....	894.4	885.2	879.4
Fatty matter .....	17.5	28.8	26.5
Cholesterin .....	5.4		
Mucus .....	11.2	6.1	
Albumen .....	68.5	63.7	83.6
Lactates, carbonates, sulphates, and phosphates of soda, potash, and lime .....	9.7	13.5	8.9
Iron .....	a trace		
Loss .....	3.3	2.7	1.6

Nasse† has published two analyses, one of serum of pus and the other of serum of blood, with the view of comparison.

The following are his results:—

	Serum of pus.	Serum of blood.
Water .....	890.00	906.5
Solid residue.....	110.00	93.5
Organic constituents .....	92.58	85.7
Chloride of sodium .....	12.60	4.6

\* Medical Times, Jan. 11, 1844.

† Simon's Beiträge, p. 338.

	Serum of pus.	Serum of blood.
Carbonate of soda .....	2.23	1.4
Phosphate of soda .....	0.32	0.9
Sulphate of soda .....	0.18	0.3
Phosphate of lime .....	1.20	0.7
Carbonate of lime .....	0.90	

The peculiar animal matter, *pyin*, that has been isolated, by some chemists, from pus, has been shown by Mulder to be merely trit-oxide of protein.

Pus sometimes contains infusoria; thus R. Wagner has observed minute ciliated animalcules in pus from cancer of the lip. Valentin has likewise noticed them in the purulent fluid of carcinoma. Donne has observed the *vibrio lineola* in pus from chancres and gonorrhœa, and found other forms of infusoria in pus from syphilitic vaginitis; they were twice the size of the blood-corpuscles, with a round or elliptic body, considerably prolonged anteriorly: he proposes for this animalcule the name of *trichomonas vaginalis*.

#### § VI.—The Urine.

49. *Urine in health.* The researches of Liebig on this subject, although of the highest importance, hardly fall within the scope of this report. It is necessary, however, to state this much regarding them. He has disproved the existence of lactic acid in the urine; but after repeating the steps of Lehmann's analyses (who has made numerous quantitative determinations of this acid in the urine during different diseases), allows that he obtained results apparently similar to those of Lehmann, except that what the latter chemist supposed to be lactate of zinc, was in reality not a lactate, but a zinc compound of a nitrogenous body. He proves that hippuric acid is associated with uric acid in human urine, and considers that their solvent is common phosphate of soda, because on the addition of these acids to a solution of that salt, there are formed a urate and hippurate of soda, and an acid phosphate of soda. He does not, however, regard the presence of these acids as the only cause of the acidity of the urine. The sulphur of the constituents of the blood becomes ultimately converted into sulphuric acid by the oxygen absorbed in the process of respiration, and appears in the urine in the form of sulphates. The alkaline base with which this sulphuric acid is combined is supplied by the soluble alkaline phosphates, which, in consequence of this partial deprivation of base, are converted into acid salts. Hence the acid, alkaline, or neutral re-action of the urine of healthy persons, does not depend on any difference in the processes of digestion, respiration, or secretion, but on the constitution of the aliments, and on the alkaline bases that enter the organism through the medium of these aliments.\*

The nitrogenous substance resembling lactic acid has been subsequently examined by M. Pettenkofer. He exhibited it by precipitating the alcoholic extract obtained from carefully-evaporated urine, and which had been neutralized with a little carbonate of soda, with a concentrated alcoholic solution of chloride of zinc. He obtained first an amorphous precipitate, insoluble in water, and then minute granular crystals, soluble in a large quantity of water, and very similar to lactate of zinc. They form four-sided prisms with oblique terminal surface, and are insoluble in alcohol and ether. The adherent metallic chloride is removed from them by digestion in boiling alcohol. When they are dissolved in water and warmed with hydrate of barytes, the colouring matter is precipitated along with some oxide of zinc; the barytes and oxide of zinc are then removed as carbonates by passing carbonic acid through the solution; the filtered liquid is evaporated to dryness, re-dissolved in spirit, the barytes still present thrown down by sulphuric acid, the sulphuric and hydrochloric acids removed by boiling with oxide of lead, and any lead contained in the filtered solution got rid of by sulphuretted hydrogen. On evaporating the solution filtered from

\* *Lancet*, Nos. 11, 12, vol. 1, 1844.

the sulphuret of lead, a white crystalline neutral substance is obtained, which dissolves easily in water and alcohol, has a slightly bitter pungent taste, and is not precipitated from its alcoholic solution by chloride of platinum. It is nitrogenous, and contains 39·37-39·28 per cent. C, 6·79-7·39 H, 33·63-34·41 N; the formula  $C^4 N^3 H^8 O^3$  requires 39·2 C, 6·4 H, 34·7 N, and 19·7 O.\*

A new acid in the human urine has likewise been announced by Heintz. It also resembles lactic acid in forming very sparingly soluble salts with oxide of lead: it differs however from lactic acid in several particulars, the two most important being that it separates in crystals and that it contains nitrogen. From 50 pounds of urine, Heintz was only able to extract about 8 grains.†

50. *Composition of Healthy Urine.* The urine in its normal condition has been recently analysed by Becquerel, Lehmann, Simon, Marchard, and myself. It is singular that the analyses of Lehmann and Marchard approximate closely to the old analysis of Berzelius, while those of Becquerel, Simon, and myself agree pretty clearly with each other, but are far removed in their results from the former group. The following analyses will illustrate this point:—

	Marchard.‡	
	1.	2.
Water.....	933·199	938·856
Solid constituents.....	66·801	61·144
Urea.....	32·675	30·321
Uric acid.....	1·065	1·001
Free lactic acid.....	1·521	1·362
Extractive matters.....	10·513	10·032
Vesical mucus.....	0·283	0·201
Sulphate of potash.....	3·597	3·201
Sulphate of soda.....	3·213	3·011
Phosphate of soda.....	3·056	2·998
Biphosphate of ammonia.....	1·552	1·231
Chloride of sodium.....	4·218	4·001
Chloride of ammonium.....	1·652	1·231
Earthy phosphates.....	1·210	1·001
Lactates.....	1·618	1·032

As an illustration of the other group, we will quote two of Simon's analyses:—

	Simon.	
	1.	2.
Water.....	963·00	956·000
Solid constituents.....	36·20	44·000
Urea.....	12·46	14·578
Uric acid.....	0·53	0·710
Alcohol-extract and lactic acid.....	5·10	4·800
Spirit extract.....	2·60	5·693
Water extract and mucus.....	1·00	2·550
Lactate of ammonia.....	1·03	
Chloride of ammonium.....	0·41	
Chloride of sodium.....	5·20	7·280
Sulphate of potash.....	3·00	3·508
Phosphate of soda.....	2·41	2·330
Earthy phosphates.....	0·58	0·654
Silica.....	a trace	a trace.

For other analyses of healthy urine, and for an account of Lehmann's experi-

\* Liebig's Annalen, liii. p. 97.

† Poggenorff's Annalen, vol. 62, p. 602.

‡ Lehrbuch der Physiologischen Chemie. 1344, p. 232.

ments respecting the effect of diet on the urine, I must refer to the *Lancet*, Feb. 15th, 1845.

Segalas has instituted a series of experiments on dogs, with the view of ascertaining the effect of lesions of the spinal cord on the urinary secretion. His conclusions are that every portion of the spinal cord may be successively destroyed, without the secretion of urine being suspended, or even sensibly diminished, provided respiration be artificially kept up, and that any changes that may occur in the composition of the urine are not produced directly by the lesion, but result from the secondary catarrhal inflammation of the bladder.

51. *Urine in Disease.* In consequence of the length to which this report has already extended, I must refer the reader to the *Lancet*, Feb. 15th, 1845, where he will find two analyses of the urine in pericarditis, two in pneumonia, one in hepatitis, one in puerperal peritonitis, four in Bright's disease, nineteen in typhus, one in land scurvy, four in chlorosis, one in cholera, one in rheumatism, four in rhachitis, one in phthisis, and ten in diabetes mellitus. The following are the principal additions to this department of pathological chemistry:—

52. *Urine in Herpes Zoster.* Heller\* has analysed the urine in three cases of this disease:—

1. A boy aged 8 years; eruption on the right side; no fever; urinary secretion abundant. The urine was of a pale yellow colour, rather turbid, rapidly became putrid, and deposited a sediment of beautifully formed crystals of ammoniaco-magnesian phosphate.

The urine was faintly alkaline on emission, and its specific gravity varied from 1014 to 1015. It contained in 1000 parts:—

Water .. .. .	970.00
Solid Constituents .. .. .	30.00
Urea .. .. .	8.94
Uric acid .. .. .	traces
Fat .. .. .	0.14
A little extractive matter with a large amount of	
muriate and carbonate of ammonia .. .. .	9.32
Fixed salts consisting of .. .. .	11.60
Earthy phosphates .. .. .	2.000
Chloride of sodium .. .. .	4.154
Sulphate of potash .. .. .	0.164
Phosphate and carbonate of soda, &c. .. .. .	5.282

Not a trace of hippuric acid could be discovered.

2. A man aged 31 years: eruption on right side; slight fever. Urinary secretion considerably suppressed, the urine analysed being the first that had been passed for twenty-four hours. In a few hours it formed a sediment of ammoniaco magnesian phosphate and urate of ammonia. It was strongly alkaline, and its specific gravity was 1028. It contained in 1000 parts:—

Water - - - - -	944.40
Solid constituents - - - - -	55.60
Urea - - - - -	15.79
Uric acid with a little urate of ammonia - - - - -	1.80
Fat - - - - -	0.34
Extractive matters, with much hydrochlorate	
and carbonate of ammonia - - - - -	21.35
Fixed salts in the sediment - - - - -	0.43
Fixed salts in the urine - - - - -	16.32
consisting of	} 16.75
Earthy phosphates - - - - -	
Chloride of sodium - - - - -	
Sulphate of potash - - - - -	
Phosphate of soda, &c. - - - - -	8.24

\* *Achiv*, vol. i. pp. 29-32.

3. A young man, aged 19 years : eruption chiefly on left side ; no fever. The urine was very clear. In the course of 12 hours it became turbid and deposited beautiful crystals of ammoniaco-magnesian phosphate. Specific gravity 1018.

The urine contained in 1000 parts,

Water	-	-	-	-	-	-	-	-	958.90
Solid constituents	-	-	-	-	-	-	-	-	41.10
Urea	-	-	-	-	-	-	-	-	14.20
Uric acid	-	-	-	-	-	-	-	-	0.20
Fat	-	-	-	-	-	-	-	-	0.12
Extractive matters, much muriate of ammonia, &c.	-	-	-	-	-	-	-	-	12.14
Fixed salts	-	-	-	-	-	-	-	-	14.44
consisting of									
Earthy phosphates	-	-	-	-	-	-	-	-	2.60
Chloride of sodium	-	-	-	-	-	-	-	-	5.40
Sulphate of potash	-	-	-	-	-	-	-	-	0.08
Phosphate and carbonate of soda, &c.	-	-	-	-	-	-	-	-	6.36

From these analyses we may conclude that in Herpes Zoster the chief peculiarities of the urine are :—

1. A marked increase in the chlorides and phosphates, and a corresponding diminution in the sulphates.
2. An excess of hydrochlorate of ammonia.
3. A large amount of fat.
4. A diminution in the amount of uric acid. It is only increased when the disease is accompanied with fever.

The presence of oxalate of lime may always be suspected in these cases.

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As it has been requisite to devote a much larger space than will be usually required to the chemistry of the blood, in consequence of the Memoir of M.M. Berquerel and Rodier, we are compelled to postpone the notice of several important papers to our next report.



## VI.

REPORT ON THE PROGRESS OF MATERIA MEDICA  
AND PHARMACY.

BY GEORGE JOHNSON, M D., LOND.

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1. *The medicinal qualities of the Indian Hemp, and the best mode of administration.* The hemp has long been known in India as a powerful intoxicating plant. It has in consequence a variety of names applied to it in Arabic, some of which have been translated as "leaf of delusion," "increaser of pleasure," "exciter of desire," "cementer of friendship," &c. Linnæus was well acquainted with its "vis narcotica, phantastica, dementens."\* In 1839, Doctor O'Shaughnessy† directed attention to it as a valuable remedy in rheumatism, tetanus, cholera, and infantile convulsions, and published some cases treated by himself, Mr. O'Brien, Dr. Bain, and Mr. Richard O'Shaughnessy, the result of which appears fully to justify the opinion he entertains of it, as a most valuable therapeutical agent. Thus one patient, in whom tetanus supervened upon cauterization of the back of the hand by a native empiric, was completely relieved of the tetanic paroxysms, but died from the extension and mortification of the ulcer on the hand. Of seven cases of severe tetanus treated by Mr. O'Brien, four recovered; and one deplorable case of traumatic tetanus, arising from two suppurating wounds on the scrotum, was cured by Mr. Richard O'Shaughnessy. The effects of the hemp in these cases were giddiness, intoxication, and sleep, during which the tetanic paroxysms ceased, returning again with diminished violence on awaking, and being again removed by a repetition of the medicine. Since the publication of Doctor O'Shaughnessy's essay, the hemp has been administered in this country, both to animals and to the human subject, but without any very marked effects.‡ Mr. Donovan has ascertained that hemp grown in this country is destitute of the principle which renders the Indian plant so desirable an excitant to the voluptuous people of the east. As to the mode of administration, Mr. Donovan remarks:—

"I am of opinion that all the preparations, the only one to be relied on is the tincture of the resin, prepared in India from hemp collected at the proper season.

"As to the modes of administration, I have tried many, and find the following to be the best:—

R̄ Tincturæ resinæ cannabis Indicæ ℥xv.

Spiritus rectificati ℥xlv.

Misce: fiat haustus.

"The patient should be directed either to swallow the whole of this directly from the bottle, to avoid loss, or to pour it into a little water, and *instantly* swallow it off. If it be not taken instantly, the resin will be precipitated, will adhere to the vessel, and thus escape being swallowed. This always happens when the prescriber directs water to be mixed in the draught by the apothecary:

\* Dr. Royle's Illustrations of the Botany of the Himalayan Mountains, p. 324.

† On the preparation of the Indian Hemp or Gunial, Calcutta, 1839.

‡ Pereira's Materia Medica, vol. ii, 2d ed., p. 1093.

§ Dublin Journal of Medical Science, January, 1845, p. 368.

|| One drachm of the tincture contains three grains of the resin.

and I have seen several disappointments in consequence. The form of emulsion does not succeed; for although the resin is at first diffused, it sooner or later separates. The practitioner should be also on his guard to order the tincture of the resin, lest tincture of the herb be used, which in small quantities is powerless."

Mr. Donovan reports several cases of neuralgia, which, he says, are not a selection of the successful cases out of many, but a faithful record of all that came under his observation, of which the termination was distinctly known. It appears that far more than the majority of them were cured by the agency of the hemp, and that all the rest were more or less relieved.

The most remarkable effects observed by Mr. Donovan were giddiness, confusion of ideas, great diminution of feeling, and sound sleep. He says the effect on the sensorium is generally alarming to the patient as well as to the bystanders, unless they were previously made aware of what was to be expected. Some patients evince great terror of death; but on recovering from the fit of narcotism, they laugh at their fears, and are generally ready for another trial. The aphrodisiac effects of hemp have been insisted on by all Oriental writers. Among all the instances of its administration to male patients, Mr. Donovan observed this effect in one only. In no case did it produce those rapturous ideas and ecstatic dreams described by the Oriental writers. In only one or two were the ideas even pleasing; and some were singularly depressed, and under apprehension of immediate death. All writers agree in attributing to Indian hemp the effect of exciting hunger, and this often in a voracious degree. This effect has been repeatedly observed by Mr. Donovan. He says the reflecting portion of the profession will decide for themselves whether, as ministers of relief to the sick, they are at liberty to withhold an impartial trial to a medicine of such approved power, and expresses his belief that Indian hemp will one day or another occupy one of the highest places amongst the means of combating disease.

2. *On the pharmaceutical and chemical characters of the Peruvian matico.* Dr. Hodges states that about five years ago, he received a parcel of the leaves of the matico from a friend who had resided many years in Peru. The latter informed him that they were universally regarded by the native practitioners of that country as a most valuable remedy in various diseases, and also related several marvellous stories, current among the Indians and European settlers, of their power in arresting the most violent hemorrhages, particularly those connected with the bladder and urinary organs. As the leaves have not been subjected, so far as we can ascertain, to a careful chemical examination either in this country or on the continent, the following observations may be interesting:—It is, we believe, to Dr. Jeffreys of Liverpool, that we are indebted for the first notice, in this country, of the medicinal virtues of the matico.\*

Its action, when applied externally as a styptic, has been established in the practice of Dr. Munro,† of Dundee; and Dr. Lane,‡ of Lancaster, has also lately communicated the results of his experience regarding its internal administration, which are confirmatory of its South American reputation. On the Continent, a short notice of it has appeared in the *Pharmaceutische Central Blatt*, January 1843, by Dr. Martius; and a brief and imperfect account of it is also given in the *Dictionnaire* of Mérat and Lenz. It is stated by Dr. Martius that like the gunjah which the East Indian prepares from the *cannabis Indica*, the leaves and flowers of the matico have been long employed by the sensual Indians of the interior of Peru to prepare a drink, which they administer to produce a state of aphrodisia.

The botanical history of the matico appears to be but imperfectly known; and there exists a difference of opinion even as to the class of plants from which it is derived; Dr. Martius, in the *Pharmaceutische Blatt*, considering it to belong to the *Phlomis* tribe, while in the *Flora Peruviana* it is described as a *Piper*.

\* Transactions of the Provincial Medical Association, vol. ii. p. 347-366.

† Provincial Medical and Surgical Journal, June 13th, 1842.

‡ Medical Gazette, October 6th, 1843, p. 9.

By immersing a specimen of the plant in warm water, we are able to examine it with considerable accuracy; and certainly its characters appear very unlike those which belong to the *Phlomis* family. The stems are woody, round, and pubescent; the leaves sessile, acuminate-lanceolate, rugose, and crenate, their upper surface of a dark green, and their lower of a pale green colour.

It is said that the name of the plant is derived from a Spanish soldier named Matico, who, lying desperately wounded, and bleeding to death, in his agony caught accidentally some of its leaves, and by their application arrested the hemorrhage, and healed the wound. The leaves have a strong, aromatic, slightly astringent taste. From experiments which Dr. Hodges has made, he concludes that they contain the following constituents:—1, Chlorophylle; 2, a soft dark green resin; 3, a brown colouring matter; 4, a yellow colouring matter; 5, gum and nitrate of potash; 6, a bitter principle, maticine; 7, an aromatic volatile oil; 8, salts; 9, lignin. The leaves of the matico are easily reduced to a fine powder, which has the colour of powdered senna. When mixed with any thick vehicle, as syrup, &c., it presents an excellent mode of administering them, though only adapted for extemporaneous prescription; as the essential oil, upon which it is probable much of their medicinal effect depends, would be rapidly dissipated by keeping; the cold infusion, as it extracts all the active principles contained in the plant, seems the best form for obtaining its medicinal properties.\*

3. *Preparation and medicinal employment of valerianate of zinc.* The valerianate of zinc first proposed as a remedy by Prince Louis Lucien Bonaparte, has for some years occupied an important place among the medicines of Italian physicians, and during the last few months it has got into great favour both in this country and in France. Under these circumstances, a review of what has been published relating to it will interest many of our readers.†

Valerianic acid, discovered by Planché, was isolated by Grote, and investigated by Penz. It preexists in the root of the valerian, but it may likewise be readily produced by acting with caustic potash upon potato fused oil. It is a volatile fat acid, colourless, soluble in every proportion in alcohol and ether, and soluble in about thirty times its weight of water. To obtain it, the valerian root is distilled, until the product has no longer an acid reaction; the essential oil which floats on the surface of the distilled water is separated, and the acid which it retains removed by shaking it with solution of caustic potash; the distilled water is saturated with carbonate of potash, the liquids mixed, and then evaporated to dryness at a very gentle heat; the residue introduced into a retort, and distilled with a suitable proportion of dilute sulphuric acid, affords a saturated aqueous solution of valerianic acid, on which some pure valerianic acid floats. Two pounds of valerian root afford about 2 grms. of acid.

To convert it into valerianate of zinc, it is saturated with the carbonate, or, still better, with perfectly pure oxide of zinc, recently precipitated. The action is assisted by heat, the hot solution filtered, and allowed to crystallize on a gently heated sand-bath. The crystals form light nacreous laminae of a brilliant white colour. According to M. Duclos, cold water dissolves one-fiftieth of its weight, and boiling water one-fortieth. It is scarcely soluble in ether, but 100 parts of boiling alcohol dissolve 6 parts.

The physiological effects of the valerianate of zinc are scarcely more decided than those of the valerian, or of the zinc, taken separately. It has been greatly extolled as a powerful tonic and antispasmodic, and it is particularly in the case of *tic douloureux*, which cannot be subdued by the ordinary antispasmodics, that its efficacy is said to have been confirmed by Dr. Devay, of Lyons. But notwithstanding its brilliant success, it may fairly be questioned whether it is in reality a more efficacious remedy than the ordinary salts of zinc, and whether much of its success amongst a certain class is not in a great degree attributable to the rarity and the high price of the drug. That such is the case, is to a

\* Condensed from the proceedings of the Chemical Society.

† *Journal de Pharm.* August 1844. *Chemical Gazette*, 1st November, 1844, and *London and Edinburgh Monthly Journal*, January, 1845.

certain extent proved by the observations of Dr. Fario, an Italian physician, as quoted and commented on in the *Gazette Médicale de Paris*, 1844.\*

4. *Valerianate of quinine.* This salt is prepared by adding valerianic acid, in slight excess, to a concentrated alcoholic solution of quina. The solution thus formed is to be diluted with twice its volume of distilled water, and then submitted to a heat not exceeding 129° Fahr. As the spirit evaporates, the valerianate of quina is deposited in fine crystals, either isolated or grouped, which augment from day to day.

It has a slight smell of valerianic acid, and a bitter taste resembling that of quina. It dissolves easily in water at ordinary temperatures, and still more easily in alcohol. Dr. Devay, of Lyons, has arrived at the following conclusions with regard to its therapeutical action:—

1st, That the valerianate of quina is a more powerful *antiperiodic* than the sulphate of the same base, even when administered in smaller doses.

2d, It seems indicated, from its specific actions, as a valuable remedy in fevers of the worst character. (*Journal de Pharmacie and Pharmaceutical Journal*, March, 1845.)

5. *On the iodides of quina and cinchona.* Dr. A. T. Thomson† has recently succeeded in preparing an iodide of quina, and of cinchona; two compounds which we agree with him in thinking, are likely to form valuable additions to the materia medica, inasmuch as they contain in themselves the combined properties of a most efficient tonic and one of the most valuable deobstruents which we possess. One of the great objections to the administration of iodine and iodide of potassium, is the production of that derangement of the system denominated *iodism*. Now this is likely to be prevented by the tonic influence of the quina or cinchona. It is true that we already possess such a combination in iodide of iron, but in many instances, where the influence of such conjoint powers is required, preparations of iron cannot be borne.

The *iodide of quina* is prepared by triturating together, in a mortar, 164·55 grains of pure quina, and 126·3 grains of iodine; the latter being added to the former until the whole is intimately mixed; and then boiling the mixture in a moderate quantity of distilled water at first, adding more by degrees, until as much is added as will give one grain of the iodide for each fluid drachm of the solution. During the boiling, a deep-brown resinous-like substance is formed, apparently insoluble in water, which subsides to the bottom when the solution cools.

This substance is brittle, tasteless, inodorous, and affords no indication of the presence of either iodine or quina; it is partially soluble in boiling alcohol. Dr. Thomson has not been able to ascertain its nature.

The iodide of quina, in solution, is of a pale straw colour, limpid, evolving a faint odour of iodine, and impressing upon the palate the bitter of quina; that it contains no free iodine is evinced by testing it with starch, whilst the existence of the iodine is immediately demonstrated by the development of the deep indigo-blue colour of the iodide of amidine, on adding a drop of nitric acid to the solution containing the starch. The quina in the solution of the iodide is precipitated by the infusion of galls in the form of a tannate; and, in its simple state, when the solution of pure potassa is added to the solution. It is upon these grounds, namely, the existence of both iodine and quina in this compound, that Dr. Thomson has been induced to name it iodine of quina; but the real nature of the salt contained in the solution has yet to be determined.

The *iodide of cinchona* is prepared in the same manner as the iodide of quina, taking 156·55 grains of the alkaloid, instead of 164·55. The quantity of brown, resinous-like matter is less than in the preparation of the iodide of quina; but it closely resembles it in its physical characters, its insolubility in water, and its solubility in alcohol. The solution is nearly inodorous, has the bitter taste of

\* See London and Edinburgh Monthly Journal, January, 1845, p. 67.

† *Pharmaceutical Journal*, March, 1845.

the cinchona, and a rather deeper straw-colour than the solution of iodide of quina. It is limpid, and answers to the same tests as the iodide of quina.

Dr Thomson has not yet crystallized either of these salts, but he will do so, and pursue his investigations both respecting their chemical characters and their medicinal influence, and lay the results before the Pharmaceutical Society.

6. *Adulteration of sulphate of quinine, and a method of detecting it.*\* The sulphate of quinine of commerce is very frequently adulterated with *salicine*. If the proportion of the latter alkaloid be half or even one fourth, M. Peltier states that the fraud may be detected by the addition of concentrated sulphuric acid, which produces with salicine a characteristic red colour. But if no more than a tenth of salicine is mixed with the sulphate of quinine, this red colour is not developed by the addition of sulphuric acid. In order to detect the presence of salicine in this or less proportions, this alkaloid must be isolated. For this purpose, take three or four grains of the suspected sulphate of quinine, and pour on it about six times its weight of concentrated sulphuric acid, which dissolves the salt, and if salicine be present, forms a solution of a brown colour, just like sulphuric acid soiled by some vegetable matter. To this add carefully and gradually some distilled water, until a white precipitate appears. This will probably be salicine, which will not dissolve in a moderately dilute acid solution of sulphate of quinine. Filter the liquid and collect the precipitate on a watch-glass, and it will now produce, upon the addition of concentrated sulphuric acid, the bright red colour characteristic of salicine. If too much water be added, the precipitate will dissolve, and only a loose gelatinous precipitate will form, very difficult to separate.

7. *A new method of preparing mercurial ointment.*† The irritation of the skin so frequently produced by blue ointment, prepared in the old way, led Orosi to the idea of using precipitated metallic mercury with fresh lard. The reduction of the salts of mercury to the metallic state, is, as is well known, effected by phosphorous acid, or protochloride of tin; the latter of which is employed by Orosi. He dissolves one pound of corrosive sublimate in a sufficient quantity of boiling water, and mixes an excess of protochloride of tin, with an addition of muriatic acid, with the solution. The mixture is now shaken at a moderate temperature for a short time, and the finely-divided gray mercury is allowed to settle. When the fluid is poured off, the precipitate should be well washed with warm water, dried between bibulous paper, and then mixed with the prescribed quantity of fresh lard. The fine state of division of the precipitated mercury renders this preparation of the ointment very expeditious. The only difficulty encountered in this method is the readiness with which the precipitated gray mercury forms metallic globules, especially if the precipitate be allowed to stand too long, and dry after pouring off the fluid. This union of the globules may, however, be prevented by covering the interior of the vessel in which the mercury is precipitated with fat.

Ointment prepared on Orosi's plan exhibits no globules of metal under the lens, and can at the most only contain a trace of oxide of tin, if sufficient muriatic acid be not employed in the preparation, or the precipitate be inadequately washed. Ointment prepared in this way is certainly more expensive, but is free from all rancidity, and does not require much rubbing down.

8. *Mode of expelling blood from leeches.* Mr Boyce ‡ expresses his belief that among the various means used for emptying leeches of the blood they have drawn, none will be found more simple and innoxious than to immerse them in a little *mistura camphoræ* for a few moments, when they readily vomit all the blood, and should then be put into clean water, which should again be changed in half an hour. For that disease, attended with a vomiting of dark-coloured matter, of which so many die, Mr. Boyce has used it as a remedial agent, immersing them in it twice a week, and he believes the mortality was much diminished in consequence.

\* *Journal de Chimie Médicale*, and *Lancet*, Jan. 11, 1846.

† *Buchan's Repertorium*, and *Pharmaceutical Journal*, Feb. 1845.

‡ *Pharmaceutical Journal*, Jan. 1845.

## VII.

## REPORT ON THE PROGRESS OF FORENSIC MEDICINE.

In reviewing the progress of this department of medical science, it is proposed to adopt as nearly as possible the order suggested by the relative importance of the subjects which it comprises. The first place, therefore, will belong to Toxicology. The retrospect of the first half of the present year is limited chiefly to the contents of the English journals; that of the last half of the year will extend to the contents of the Foreign journals for the entire year, together with those of the English journals published during the latter half of the year.

## § I.—Toxicology.

1. *Poisoning by Prussic Acid.* The trial of Tawell for the murder of Sarah Hart has given to this poison an unusual degree of interest, and has led to the publication of other cases, as well as to that of experiments and observations on the action of the poison and of some of its more active compounds.

Six cases of poisoning by prussic acid have been communicated to the English journals, of which two were joint acts of suicide. Five of them were fatal, and one recovered. These cases will be given in full; and will be succeeded by a short commentary on some of the more important features which they presented. The first case is that of Sarah Hart, the victim of Tawell. The post-mortem appearances in this case are described by one of the medical men who gave evidence on the trial.

*Cases of Poisoning by Prussic Acid.*

*Post-mortem examination of SARAH HART, by order of JOHN CHARSLY, Esq., Coroner for Bucks, Jan. 2, 1845, 18 hours after death. By E. W. NORBLAD, Surgeon; Slough.*

The deceased was 41 years of age, of small stature, rather spare habit, fair complexion, light hair inclining to gray, pale face naturally.

The body was lying on the floor of the room as she died; the head on a pillow, jaw tied up. The left stocking was half down the leg, there were no shoes on the feet, and the head was without a cap. The shoes (slippers) and a cap were on the opposite side of the room when the body was found by a neighbour.

The surface of the body was pale, the extremities were rigid, a little animal heat still existed in the fleshy parts of the thighs, the countenance had a calm expression, the pupils were half-fully dilated, there was no odour about the body but the usual cadaverous smell.

The body was next stripped. There were no marks of violence any where discoverable; the under garment was extensively stained with blood. It is stated that deceased never used the usual protection during the menstrual period, and that function was going on at the time of her death.

The thorax and abdomen were laid open. There were rather extensive adhesions of the pleural surfaces on both sides of the thorax, and a white patch, the size of a shilling, on the heart. These morbid appearances were of long standing; the adhesions were very firm, some close, others of considerable length.

The heart was flaccid, but full of blood on the right side; there was no fluid of any description, exceeding the usual serosity, in the pericardial or pleural sacs.

The larynx, pharynx, and trachea, were free from obstruction or disease. The lungs were healthy; no tubercle, induration, abscess, or other disease. The cavities and valves of the heart were perfectly healthy.

There was no odour differing from that of an ordinary dead body in the thorax or abdomen. The *closest possible attention* was paid to this point, by the two other medical men who were present, and we were all agreed on this point.

Some adhesions of the convex surface of the liver to the diaphragm existed; they were of much the same appearance as those in the thorax, and probably of contemporaneous origin. There was no recent disease. The abdomen was loaded, but not burdened, with fat; its venous system was filled with black fluid blood. The stomach was about half full; the gall-bladder contained but a small quantity of bile; the substance of the liver quite healthy.

The veins of the pelvic cavity were very full of blood, especially those of the ovaria, fallopian tubes, and uterus. This viscus was somewhat increased in volume, and felt rather spongy between the fingers. The bladder was empty, but *flaccid*. The external genital organs were of a blueish cast of colour; they were free from injury; there were no appearances as of connexion having recently taken place. The fore-finger passed up the vagina was withdrawn smeared with sanguineous secretion. The os and cervix uteri healthy. A section of the uterus showed its structure of a pink hue; the parietes a little increased in volume, and its interior containing sanguineous secretion and mucus; it was unimpregnated. The ovaria were healthy. The kidneys were quite healthy; the cortical and tubular portions distinct, and of the usual contrasting appearances.

The œsophagus, stomach, and duodenum, were now removed, and the stomach laid open. It contained rather more than half a pint of pulpy contents; consisting of chyme, with a few shreds of coarse beef (apparently salt boiled,) and some portions of apple.

The whole contents had an intensely sour smell, exactly resembling that of food rejected an hour or two after the commencement of digestion from a disordered stomach; but there was no odour that could possibly be considered in any respect like prussic acid. The contents were hermetically sealed for analysis.

Some tenacious mucus smeared the interior of the stomach; there was no unusual vascularity.

The head was next opened. The venous system was filled (not gorged, hardly distended) with black and fluid blood; there was no extravasation of blood, or effusion of serum in the arachnoid sac. The brain was removed; its vascular system was in a state of integrity, the circle of Willis naturally formed. Careful sections of every part of the cerebrum and cerebellum were made; there was no effusion of blood, abscess, or tumour of any part.

The vertebræ were all sound.

The sudden manner of death in this case, and absence of the characteristic smell of prussic acid, naturally led to the inference that if any poison had been taken, it would prove oxalic acid: the usual tests were therefore tried for this poison, but with negative results; and the same may be said of all the ordinary mineral and acid poisons. But prussic acid was unequivocally proved, by chemical analysis, to be present, and in considerable quantity.\*

*Case of Poisoning by Prussic Acid, communicated by Mr. NEWHAM, of Bury St. Edmunds, to Mr. ALFRED TAYLOR.†*

A commercial traveller was found dead in his bed at an inn. As there was a suspicion that the deceased had died from poison, an inspection of the body was ordered, and performed by Mr. Creed. The body was first seen by him about ten or eleven hours after death. The deceased was lying in the recumbent pos-

\* Medical Gazette, January 11, 1845.

† Guy's Hospital Reports, April, 1845.

ture inclined to the left side. The arms were bent across the chest, and were very rigid; but the hands were not clenched, nor was there any appearance indicative of convulsions before death, the body lying in the natural position of rest. One leg was slightly bent, and the lower extremities and abdomen were warm. The countenance was natural, but very pale, and without the slightest expression of suffering. The eyes were open and particularly bright; the lips were purple, and retracted so as to show the teeth and part of the gums; and about the mouth, there was decidedly the odour of prussic acid. It further appears that the bed-clothes were smoothly drawn up to the deceased's shoulders, and there was no appearance whatever of disorder about them. There had evidently been no struggling before death. On a chair, at the back of the bed, but close to it, was found a phial *with the cork in it*. This phial, in the opinion of Mr. Creed, had contained prussic acid, mixed with some essential oil, probably the essential oil of lemons. There was a small portion of liquid remaining in the bottle when it was found.

The following were the post-mortem appearances:—*Head*, The membranes of the brain were perfectly natural in every respect; the substance of the organ was also firm and natural. The quantity of serous fluid contained in the ventricles was less than usual, but it was strongly impregnated with the odour of prussic acid. The plexus choroides was pale and bloodless. *Chest*, The lungs were healthy; at the upper part the organs were of a light red colour; at the lower part they were full of a dark-coloured, muddy-looking blood. The heart was natural, but contained very little blood, and this was of a dark and muddy hue, and strongly impregnated with the odour of the poison. *Abdomen*, The liver was larger than natural, and there were several spots of medullary deposit about it. The gall-bladder was nearly empty, and the bile was dark-coloured. The pancreas was healthy, and the spleen, externally, was of a very bright violet-purple colour. The urinary bladder was natural; it contained no urine. The stomach contained more than half a pint of a viscid liquid, having a strong odour of prussic acid. A portion of the mucous membrane, at the greater curvature, was highly injected and inflamed, being of a deep red hue. The intestines were healthy, but generally empty; the mucous membrane of the duodenum was slightly inflamed in patches; and on being laid open there was a strong odour of the poison. The lower portion of the great intestines was quite empty, the deceased having involuntarily passed the fæces and urine, probably in the act of dying, and while under the influence of the poison.

The stomach, with its contents, were forwarded to Mr. Taylor for examination, but at so late a period that the analysis could not be performed till the twelfth day after death. As might be anticipated at so remote a period, there was no odour of prussic acid either in the contents of the stomach or in the products of distillation; nor did either of the tests for prussic acid succeed in detecting the presence of the poison. The evidence given at the inquest leaves no doubt that the case was one of suicide. The quantity of the poison taken was probably about three drachms, of which the strength was not ascertained, and of which the odour was disguised by the essential oil of lemons.

The case is accompanied by an instructive commentary by Mr. Alfred Taylor.

*Cases of C. W. Duckett and Elizabeth Williams.* By H. LETHEBY, M.B., Professor of Chemistry, London Hospital.\*

On Monday, Nov. 25th, I was requested by the coroner to make a post-mortem examination of the bodies of C. W. Duckett and Elizabeth Williams, both of whom had died suddenly during the night, having previously been in good health; the former was aged twenty-one, the latter twenty-seven.

I found them lying upon the bed, with their clothes on, and in such a natural position that at first sight any one would have supposed that they were merely sleeping. He lay upon his back, with his right arm under and around the waist

\* *Lancet*, December 14, 1844.



of Miss Williams, the fingers being a little flexed, as if they had suffered from a very slight spasm at the time of death; the other hand lay open and composed upon the left thigh. His features, too, wore the calm, smiling expression of a person who had died without the least agony or convulsion.

Miss Williams exhibited the same placidity of countenance; she lay on her left side, with her head resting upon one hand, while the other was thrown over the body of her lover, as if in an affectionate embrace; her legs were extended, and a little crossed, in the common position of one asleep, the dress covering them to the feet; nor were her clothes anywhere disarranged or tossed, although this must have happened if she had struggled in the act of dying. On raising her head, I observed that some colourless fluid, probably saliva, had trickled from her mouth, and this, as well as her lips, smelt strongly of prussic acid. The lungs of both were found to be quite free from disease, but so completely gorged with blood, especially upon the most dependent parts, that they looked nearly black, and felt heavy and solid. The right side of the heart was filled with the same dark blood, while the left was nearly empty; indeed, everywhere the blood had an unusually dark colour, was uncoagulable, and had a strong odour of the poison.

The abdomen presented nothing abnormal. The stomach of each contained about a pint of thick fluid, like soup, having the smell of hydrocyanic acid, and when examined internally, was found to be a little redder than usual, except at one or two places, where it had lost colour, and assumed a yellowish white tint, through which patches of red points appeared, as if blood had been effused in minute dots.

On distilling the contents of the stomach with a little dilute sulphuric acid, and then precipitating with nitrate of silver, I obtained forty-seven grains of cyanide of silver, known to be such by its perfect solubility in boiling nitric acid; this indicates about one ounce of Pharmacopoeial prussic acid.

In the evidence it appeared that the deceased gentleman had purchased two ounces of prussic acid, and no doubt they drank it simultaneously while they sat upon the bed, for two tea-cups were found close by them.

*Remarks.*—It appears to me that there are several points of most especial interest connected with these two cases. Thus the parties were both young, in good health, and they must have taken each about one ounce of the poison, and have died immediately, without the least struggle or convulsion. Now, out of the great number of experiments which I have made upon animals, I do not remember ever to have seen death produced, even by the most potent dose of prussic acid without some convulsion, and generally there is a very great deal; I must confess, therefore, that if there had been anything about this, or any other such case, which could by a possibility have attached suspicion to a third party, I should most assuredly, though, perhaps, most unjustly, have given my evidence against that party; for the conclusions drawn from my experiments would have pronounced it perfectly impossible for death to have resulted from prussic acid without its leaving some indications of struggling; and I should, no doubt, have believed from the calm and apparently studied positions of these bodies, that all such indications had been designedly removed. I do say, then, that cases of this kind should teach us caution in giving evidence, however well our opinions may be grounded, or from whatever source they may be drawn. Another interesting point, with reference to the action of the poison, is, that the blood assumed a dark colour, was uncoagulable, and had the odour of the acid. The lungs, too, were excessively congested, as was also the right side of the heart; all of which indicates that the immediate cause of death is, the stoppage to respiration and the accumulation of blood in the lungs. This cannot be dependent on a deficiency of the heart's action, for every one who has been accustomed to these inquiries knows that the heart continues to beat for some time after all the evidences of death have set in; and this would be suggested, too, by the empty condition of its left side. I have no doubt that the immediate action of hydrocyanic acid is upon the nervous centres, and through them the true and semi-voluntary muscles

become fixed or tetanic, and respiration is in this way prevented. We hear the expiratory shriek; see the spasm of the limbs, and the evacuation of the stomach, rectum, and bladder.

In all three of the cases of poisoning by prussic acid which have recently come under my notice, I have observed the peculiar condition of the stomach, which I have attempted to describe—namely, the partially congested state of its general internal surface, with the occasional white patches and red dots. The last fact to which I refer is, that the smell of the poison was very evident about the mouth, although both these bodies must have been dead at least twelve hours when I examined them.

A letter from Mr. G. Davies, published in the *Lancet* of the following week, makes one or two slight corrections in the foregoing account, by Dr. Letheby. Instead of the odour being observed twelve hours after death, Mr. Davies states that it must have been seventeen or eighteen hours. With regard to the position of the bodies, he states that that of the young man was in the posture described by Dr. Letheby; his countenance perfectly natural: the lady was lying on her side, with her head upon her lover's breast, her ringlets flowing over his chest and shoulders, her arm round his waist. Upon taking hold of her wrist I found it quite cold, and the arm so rigid, that upon raising it, her head slipped into the situation found by Dr. Letheby.

*Case of Mr. Holmes. Lancet, February 15, 1845.*

Mr. Holmes left his house on horseback, on the afternoon of Wednesday, on professional business. At about four he returned, went into the house, and complained of being much fatigued. After some cheerful conversation, he expressed a wish to be left alone, as he was sleepy. His brother, Mr. James Holmes, and deceased had some conversation on their professional business, and he was then, at his own request, left to his repose till about six o'clock. His servant said he was then sitting in his chair, leaning back, and did not seem well. She said, "You had better go to bed." As I left the room, I saw him go out of the opposite door to that at which I was leaving, into the surgery. I returned almost immediately, and as I came into the room I heard a noise as if he were sick, at the same time I heard something drop to the ground. That was the bottle now produced. I looked towards deceased, and saw him falling. He put his arms out to save himself. He fell rather forward. I ran to deceased, and lifted him up, and fetched a jug of water, of which I poured some down his throat, and threw some over his face. I then told the boy to run to Mr. James Holmes, and fetch him, as he had gone out. He came home immediately. This was ten minutes from the time of deceased falling. He gave him an emetic. Deceased's pulse was then hardly perceptible. As soon as the boy had returned from calling Mr. James Holmes, I sent him to Cirencester for Dr. Kenneir, but deceased was dead before he could get there. He breathed his last about twenty minutes or half an hour after his housekeeper heard him fall to the ground. The bottle was labelled "hydrocyanic acid, of Scheele's strength. Minimum dose, one drop." The bottle was a little less than half full when picked up. It would have held half an ounce more. The cork was in. Mr. Holmes had killed a cat with a little of it a short time before. She did not know if he had been in the habit of taking any of it himself. Mr. James Holmes said his brother occasionally complained of a pain in his head, and occasionally in his right side. He had also a slight cough. He took medicine every week. Frequently, when he had complained of pain, he had seen him take a little prussic acid by touching his tongue with the cork of that bottle. About six months ago deceased had been heard jocularly to remark upon the strength of the dose he had taken, as it had made him giddy. He was as cheerful as he had ever been in his life on the evening of his death. Dr. Kenneir and Mr. Pooley were requested to make a post-mortem examination of the body. They had no doubt deceased died from taking prussic acid. The remedies administered were brandy and ammonia. The jury after a

short consultation, returned a verdict to the effect, "that the deceased had died from accidentally taking an overdose of prussic acid."

To these fatal cases of poisoning by hydrocyanic acid must be added the brief particulars of a case of recovery from poison, related to a meeting of the Sheffield Medical Society, by Mr. Harthill. He was summoned to a soldier, aged 23, about nine o'clock in the evening of the 15th of January, and was informed that he had taken poison. He found him insensible, with convulsions. The mouth having been forced open, emetics of mustard and sulphate of zinc were exhibited. Mr. Harthill sent to Mr. Law, at the infirmary, who arrived shortly with a stomach-pump, which was used for injecting the stomach, for the tube could not be introduced far enough to withdraw any fluid. A stream of cold water was applied to the spine, and turpentine enemata administered. The effects of the cold water were instantaneous, feeling and consciousness becoming immediately evident; powerful stimuli, brandy and ammonia, were administered; sinapisms were applied to the thighs, and in about four hours, eight minims of tincture of opium were given. The next day he was much recovered, and has since been sent to head-quarters. A phial smelling very strongly of the poison was found, but the quantity taken was not ascertained.

The cases of poisoning by prussic acid, now detailed or referred to, serve to throw light upon some interesting and important questions likely to arise in courts of law. It may be well, therefore, to point out the leading facts established by these cases.

The odour of the poison was, according to the statement of Mr. Norblad, absent in the case of Sarah Hart, 18 hours after death. On the other hand, in the case reported by Mr. Newham, it was present 11 hours after death in the corpse itself, in the stomach, in the blood contained in the cavities of the heart, and in the serum effused into the ventricles of the brain. Again, in the cases of C. W. Duckett and Elizabeth Williams, reported by Dr. Letheby, the odour of prussic acid was distinctly perceived about the mouth 12 hours, but, according to Mr. G. Davies, seventeen or eighteen hours after death. The contents of the stomach and the blood were also strongly impregnated with the smell of the acid. In the case reported by Mr. Newham, the odour of the acid seems to have overpowered that of the oil of lemons with which the acid was mixed. The statement of Mr. Norblad, above referred to, was not borne out by the evidence of all the medical witnesses in the trial of Tawell, for two out of five witnesses declared that they had perceived the odour of the poison.

On this subject there are some useful observations by Mr. Taylor in an appendix to Mr. Newman's case. (*Guy's Hospital Reports*, April, 1845, p. 71.) He succeeds in establishing the proposition, "*that a liquid may have the odour of prussic acid when chemical tests fail to detect the poison.*" In confirmation of this statement, he adduces the researches of Dr. Lonsdale, who says that, in his experiments on dogs, he could perceive the odour for eight or nine days, although he could not detect the acid chemically for more than four days after death—several experiments of his own tending to a similar conclusion; and the statements to the same effect of Orfila and Christison; and he concludes by coinciding with the principle laid down by the judge on the trial of Tawell, "*That smell was a proof of its presence, but that the absence of smell was no proof of its absence.*"

Among the causes which may prevent the odour of prussic acid from being perceived may be mentioned long exposure, smallness of dose, absorption, dilution, and the predominance of other odours. These points are commented on in Mr. Taylor's essay already referred to.

One of the most important questions connected with poisoning by prussic acid is the duration and amount of voluntary motion possible after taking a fatal dose of the poison. In Mr. Newham's case, it is stated, "that the bed-clothes were smoothly drawn up to the deceased's shoulders, and there was no appearance whatever of disorder about them. There had evidently been no struggling before death. On a chair, at the back of the bed, but close to it, was found a phial

\* *Lancet*, Feb., 1845.

with the cork in it." The deceased must therefore have swallowed the poison, corked the phial, placed it on the chair close to his bed, and drawn up the bed-clothes before he lost all power of voluntary motion. In the double case of suicide reported by Dr. Letheby, the deceased, after drinking the poison from two tea-cups, which were found close by them, had time to assume the position described by him, and they died apparently without a struggle. Mr. Holmes, according to the report of his servant, after letting the bottle from which he had drunk the poison fall from his hand, put out his arms to save himself, and then fell to the ground. He does not seem to have performed any other act of volition.

The presence or absence of *convulsions* is another point of much interest, and of some importance. The absence of convulsions may be inferred from the composed appearance of the countenance, and the natural posture of the body. The countenance of Sarah Hart is stated by Mr. Norblad to have had a calm expression. In Mr. Newham's case, "the countenance was natural, but very pale, and without the slightest expression of suffering, either mental or bodily; and from the appearance of the bed-clothes, it was inferred that "there had evidently been no struggling before death." Dr. Letheby infers, from the position of the bodies of Duckett and Miss Williams, that they died immediately, "without the least struggle or convulsion." In Mr. Holmes's case, no mention is made of convulsions; but in that of the soldier, Mr. Harthill is stated to have found him insensible, with convulsions." It would appear, then, that convulsions are by no means constant symptoms of poisoning by prussic acid, but that they are of occasional occurrence. The same inference is to be drawn from experiments upon animals to be presently mentioned, with this difference, perhaps, that in animals convulsions are the rule, but in man the exception. The other symptoms and the post-mortem appearances do not require any special notice. For information on these subjects, it will be sufficient to refer the reader to the cases themselves.

*Treatment of poisoning by prussic acid.* The excellent effect of the cold affusion is displayed in the case of the soldier. "The effects of the cold water (applied to the spine) were instantaneous; feeling and consciousness became immediately evident." The rest of the treatment in this case consisted of emetics of mustard and sulphate of zinc, the injection of the stomach by means of the stomach-pump, a turpentine enema, sinapisms to the thighs, and the use of brandy and ammonia.

*Experiments on animals.* Mr. G. L. Blythe, of Maida Hill, in a letter addressed to the *Lancet*,\* states that he poured about a drachm of Scheele's acid on the nose and mouth of a cat. "The poor thing at first appeared stupified, and in about 10 or 15 seconds it staggered, calmly stretched itself at full length, and expired without a struggle or moan. What I more particularly wished to observe," Mr. Blythe adds, "was the 'expiratory shriek;' and I was the more astonished, as I had never before seen death take place in animals from the effects of prussic acid, without violent struggling, and one or more screams." From this experiment, Mr. Blythe fairly infers the possibility of death taking place in the human subject without the expiratory shriek.

Mr. Alfred Taylor, in the course of his commentary on Mr. Newham's case of poisoning by prussic acid (*Guy's Hospital Reports*, April 1845,) alludes to the results of his own experiments on animals. Of these results the most important are the absence of the shriek or scream to which so much importance has been attached; the universal occurrence of convulsions; and the absence of all trace of such convulsions after death, though very strongly marked during life; and the variable period at which equal doses of the poison begin to act on different animals of the same species. "In some instances," he says, "I have observed that the effects were immediate; there was no appreciable interval, either to the person who held the animal or to myself, between the time of applying the poison to the tongue and the commencement of the symptoms. There were convulsions with opisthotonos in cats, and emprosthotonos in mice; but in several instances, although the animal appeared of equal strength, and the dose was the same, the

symptoms did not commence until after the lapse of from fifteen to thirty seconds." Dr. Letheby also, in commenting on the double case of suicide already referred to, states that in all his experiments on animals, convulsions were present. In animals, then, we may consider convulsions as the rule, and their absence a rare exception.

*Tests for prussic acid.* Mr. Taylor has examined the delicacy of these tests, and states his results as an addition to his comments on Mr. Newham's case. The *nitrate of silver* test produces a milkiness with less than the 4000th of a grain of anhydrous prussic acid, in a minimum of water; but it only begins to give a decided precipitate with the 220th gr. in about 13000 parts of water. Even then all the properties of the precipitate cannot be brought out, because, from so small a quantity of cyanide of silver as is there formed, it is impossible to produce cyanogen in sufficient quantity for combustion. The smallest quantity of the cyanide of silver from which Mr. Taylor could obtain a flame was the *tenth* of a grain, equal to about the fiftieth of a grain of anhydrous prussic acid—a quantity contained in about *two drops* of the pharmacopœial acid, or in less than *one drop* of Scheele's acid. When the quantity of cyanogen is very small, Mr. Taylor has sometimes adopted the plan of receiving it on bibulous paper impregnated with the mixed oxide of iron, obtained by moistening the paper with potash, and then dipping it into a solution of the green sulphate of iron. On afterwards dipping the paper into dilute sulphuric acid there has been a distinct stain of prussian blue on the paper, clearly showing that cyanogen was one of the products of the distillation. The tube in which the cyanide is heated may be bent like a retort, and its point inserted in a few drops of water slightly alkaline, and holding the mixed oxides suspended. After the decomposition, the surplus oxide of iron may be removed by dilute sulphuric or muriatic acid, and prussian blue will be left, at once announced by its colour. Mr. Taylor adds a caution quite unnecessary when operating on a precipitate obtained from a distilled liquid, "that any organic (nitrogenous) matter, heated in contact with an alkaline base, or alkaline metal, will produce cyanogen. I have in this way," he says, "procured from the dried body of a small insect, sufficient cyanogen to produce a perceptible quantity of prussian blue."

*Prussian-blue Test.* The point at which the oxides of iron begin to indicate the presence of prussic acid was the 50th of a grain of the acid in 3000 parts of water—a quantity equal to that required for the production of a sufficiency of cyanide for the evolution of cyanogen. It is added that this test "will more frequently answer than the silver test in the hands of those not much accustomed to analysis, because it is extremely difficult to procure cyanogen from very minute quantities of cyanide of silver."

The prussian-blue test likewise detects minute quantities of the oil of bitter almonds. "One drop of the oil, mixed with two or three drops of alcohol, and treated with sulphate of iron and potash, gave a well-marked precipitate of prussian blue. There can be no doubt that half a drop of the essential oil may be easily detected by this test." (*Guy's Hospital Reports, Second Series, No. V., p. 39-75.*)

2. *Poisoning by the Cyanides.* The results of some experiments performed by Dr. Letheby with these substances will be found recorded in three successive communications to the *Medical Gazette*.\* The first paper is devoted to the cyanide of potassium, the second to the bichloride of mercury, and the third to the cyanide of silver.

*Cyanide of potassium.* Dr. Letheby states it as the result of his experiments that, excepting prussic acid of a strength of 4 per cent., cyanide of potassium is the most virulent and active of all the compounds into which cyanogen enters. "Five grains of this salt, dissolved in two drachms of water, and given to a middle-sized dog, occasioned death in about seven minutes, producing all the symptoms of poisoning by hydrocyanic acid; and when it was given in larger doses,

\* Jan. 2, Feb. 4 and 17, 1845.

its action became the more speedy. For instance, in one experiment I gave half a drachm, in solution, to a spaniel, and before I had time to release the animal its effects had commenced: in 13 seconds the dog fell; and in 32 it lay apparently dead. There were from that time no further convulsions; reflex action had for the most part ceased; the eye could be touched without the lid winking, and the sphincters had relaxed. Yet, notwithstanding this, the heart continued to beat for six minutes, and, in many instances I have known it pulsate between 8 and 12 minutes after life had apparently terminated." In cases of poisoning by the cyanides, there is always a smell of prussic acid in the stomach, whether the body be opened directly or some time after death. This is attributed to the liberation of prussic acid by the action of the gastric juice upon the salt.

*Bicyanide of mercury.* From some experiments performed with this poison, Dr. Letheby infers "that two grains of bicyanide of mercury are sufficient to cause the death of small dogs; that it acts, when put into the stomach, as a powerful local irritant, occasioning violent vomiting, and subsequently purging and bloody evacuations. The constitutional effects are first a loss of volition; the animal totters, and loses control over the limbs as if they were paralysed. The mental faculties, however, are not impaired, nor does there appear at this stage to be either pain or spasm. The second effect is like that of prussic acid, violent convulsions, loud screams, and a spasm of the respiratory muscles; for the time reflex action ceases, and the subsequent effects are paralysis of the voluntary, and afterwards the involuntary muscles, coma, the breathing becoming slower and slower, and the heart's action fluttering, and subsequently laboured. It at first appeared that these effects were rather due to a gradual liberation of hydrocyanic acid, which maintained a slow but constant action upon the system; but the fact that the same symptoms are produced when the salt is injected into the veins or peritoneum, leads to a belief that the effects are specifically those of the combined elements." The post-mortem appearances were "a highly congested state of the stomach, a semi-coagulated black blood, which fills the right side of the heart and cavæ, and a congested state of the vessels of the brain." Dr. Letheby's experiments with the bicyanide of mercury further show that prussic acid is liberated from the salt when it mixes with the acid contents of the stomach, and that both it and the mercury are readily detected. When the poison is given in a large dose, it produces such constant and violent vomiting that it is entirely expelled.

*Cyanide of silver.* The conclusions which Dr. Letheby draws from his experiments with this substance are, "that it acts as a local irritant, producing great vomiting, and a congested state of the vessels of the stomach; that when it has been dried before its introduction into the system, no other ill effects follow; but if it is administered in a moist state, it is then capable of becoming absorbed, and perhaps decomposed, for an albuminous solution has the property of dissolving the cyanide, and, moreover, the contact of it with any of the chlorides of the systemic fluids would produce a double decomposition, and the formation of a soluble cyanide, whose effects would be similar to that of cyanide of potassium. The dose which is capable of killing a dog is five grains; its specific action seems to be on the brain, producing occasional convulsions, always coma, paralysis, a peculiar sighing respiration, a fluttering, irregular, and tumultuous action of the heart, and it ultimately kills by a gradual exhaustion of the involuntary acts, death taking place in from one to three hours after its administration. The post-mortem appearances are a dilated pupil; an injected state of the vessels of the brain; the heart gorged and full of black blood, especially on its right side; and when the poison has been administered by the stomach, that organ is exceedingly congested, completely emptied of solid matters, and may smell slightly of prussic acid; but there is no difficulty in detecting chemically the presence both of cyanogen and silver."

The effects of this class of poisons on strong and healthy animals are thus summed up: an apparent giddiness; a staggering walk; an effort to vomit; the animal then generally fell, was convulsed, foamed at the mouth, made great efforts at respiration, shrieked, and died with a strong convulsive action of all the muscles of the body; the eyes stared; the limbs were extended, and the bladder.

and rectum emptied. When, however, the animal had been previously exhausted, either by bleeding or want of food, death took place for the most part quietly, without much struggle or cry."

3 *Hydrocyanic acid in organic liquids.* The following method of detecting this poison in organic liquids is quoted in the *Lancet*, Jan. 25, 1845, from Berzelius's *Jahresbericht* xxxiv, p. 269. "The contents of the stomach must be mixed with one sixth of their bulk of alcohol, and a fourth part is to be distilled off. If prussic acid was present, it will be detected in the distilled product by its peculiar odour; or by first adding to it a little caustic potash, and then an acid solution of the mixed protochloride and perchloride of iron, when prussian blue will be formed. If the poisoning was supposed to have been effected by a cyanide, hydrochloric acid will have to be added along with the alcohol previous to distillation." The advantages which this method may possess over the common process of distillation of the contents of the stomach by a water-bath are not stated, nor are they very obvious.

3. *Poisoning by Arsenic.* Next in importance to the subject of poisoning by prussic acid is that which usually holds the first place—poisoning by arsenic.

*Tests for Arsenic—Marsh's Test.* A scientific committee has been appointed by the Prussian government to examine the several methods proposed for the detection of arsenic, and to report upon them. They have suggested a modification of Marsh's test, which is certainly a great improvement upon the original form of apparatus. A strong glass tube an inch and a quarter in diameter, and ten inches long, is contracted at each end, the lower aperture being about half an inch in diameter. The upper opening is fitted with a cork through which passes a second glass tube two lines in diameter and ten inches long, terminated above by a stop-cock, to which it is joined by a short caoutchouc tube. A second narrow glass tube, free from lead, and eight inches in length, is connected with the stop-cock in the same way at right angles to it, and to the unattached end of this tube, a third tube, bent downwards at right angles, is attached. The first-named tube is placed in a tall glass vessel from sixteen to eighteen inches high, and large enough to admit it easily.

Through the lower opening of the first-named tube long strips of zinc free from arsenic are to be introduced, and to be kept in their place by a spiral wire of copper inserted into the aperture. The stop-cock being closed, a mixture of dilute sulphuric acid, with the suspected liquid, is now poured into the vessel till it stands just above the junction of the larger with the smaller of the inner tubes. The stop-cock is then opened so as to allow the liquid to rise into the inner tube, and the stop-cock is again closed. The gas generated in the inner tube forces the liquid back through its lower opening into the outer vessel. Any froth which forms during the operation may be destroyed by gently shaking the apparatus.

While the gas is being generated in the inner tube, the centre of the horizontal tube is heated to redness by an argand spirit-lamp, the end of the depending tube being immersed in water contained in a small glass vessel. When the horizontal tube is quite red-hot, the cock is opened to such an extent as to cause the gas to bubble slowly through the water. As soon as the inner tube is again filled with liquid, the stop-cock must be closed till the tube is again filled with gas. In this manner the operation is to be continued till a quantity of arsenic is deposited sufficient for the application of the tests. When the cock is closed, the tube is filled with hydrogen gas, so that we can apply the test of heat to ascertain whether the metal which has been deposited has the volatility of arsenic. The arsenic having been thus collected in a distinct ring, the tube is removed, and a succession of similar tubes substituted in its place.

The character of the crust is now to be tested in the following way:—One of the flat tubes is to be cut with a file near the part on which the metal is deposited, and to be placed in a small test tube containing fuming nitric acid, in which the arsenic is to be dissolved by the aid of heat. The solution thus obtained is then evaporated to dryness on a watch-glass over a water-bath, so as to drive off the excess of nitric acid. The arsenic acid thus formed is soluble in water, while

antimonious acid, or the oxide of antimony, is insoluble. The arsenic acid gives, with a neutral solution of nitrate of silver, a dull red precipitate of arseniate of silver. The arsenic contained in a second tube may be converted into arsenious acid, and identified by the form of its crystals (octohedrons.) The arsenious acid may then be washed out with a little distilled water containing some ammonia, and tested with dilute nitrate of silver. A third tube may be hermetically sealed, so that the crust may be produced in court.

The zinc and sulphuric acid should be previously tested in the same apparatus to ascertain whether they are free from arsenic. The depending tube may be reversed so that the gas may be ignited as it issues from it, and crusts be obtained on slips of glass, as in the original form of Marsh's apparatus.

Dr. Letheby (*Lancet*, March 15, 1845,) among several objections of less force which he urges against this form of apparatus, mentions the frothing of the liquor, and the escape of the particles of zinc from the central tube into the acid liquor without, whereby arseniuretted hydrogen will be generated and lost. In place of this process he recommends a modification of those proposed by Lassaigne and Reinsch. The filtered liquid obtained by boiling the contents of the stomach in distilled water, slightly acidulated with acetic acid, is divided into two portions, to one of which Reinsch's test is applied in the usual way. The other portion is evaporated to dryness, and heated with twice its bulk of strong sulphuric acid till it is quite charred. The residue diluted with distilled water is to be gradually introduced into a large Wolfe's bottle, in which hydrogen is being slowly evolved from pure zinc and dilute sulphuric acid. The resulting gas is to be conveyed through a bent tube, drawn to a fine point, into a solution of nitrate of silver. A black precipitate will be formed, to which muriatic acid is to be added till all the silver is precipitated, and a little of the acid remains in excess. The supernatant liquid is to be boiled for a few minutes, filtered, and evaporated to dryness: the residue, if there be any, is to be dissolved in a little distilled water, and carefully precipitated by ammoniacal nitrate of silver. The red arseniate of silver is formed, which may be reduced by means of black flux or charcoal. If the substance to be tested be a piece of muscle or liver, it must be charred by means of sulphuric acid, and the resulting liquid being divided as before into two portions must be submitted to the two processes of Reinsch and Lassaigne, the liquid having been previously nearly neutralized by carbonate of soda. The advantages which Dr. Letheby assigns to this two-fold process are its delicacy, the avoidance of froth, and (in the case of Lassaigne's process) the absence of the fallacies occasioned by antimony. The objection to the process is the number of stages of which it consists, but it is doubtless to be preferred to the plan suggested by the Prussian scientific committee.

4. *Arsenical Candles.* On Friday, January 3, 1845, an inquest was held by one of the deputy coroners for Middlesex, on the body of Joseph Hagggett, aged 21, late a workman in the employ of Messrs. Le Paige and Co., composition candle manufacturers, Great Suffolk street, Borough. The case is important, as it proves the continued use of arsenic in the manufacture of candles, in spite of the exposure which was made of the practice some years since; as also that the process of manufacture, as well as the use of the candles themselves, may be attended with danger. It appears from the evidence that the deceased first complained of his hand being poisoned on Wednesday the 25th December, and that he died on the Monday following. Mr. Edward Roe, surgeon, saw the deceased on Saturday morning, when he found him with the left hand and fore-arm, and the gland of the axilla swollen, and an abrasion at the back of the hand. The angry appearance of the limb satisfied him that it had been poisoned. Saline draughts, fomentations, and poultices were ordered, but the patient got worse, purple patches appeared on the arm and side, and he died, as has been stated, on Monday morning. From the evidence of the employer, Mr. Le Paige, it appeared that, instead of using 8 ounces of arsenic to 1 cwt. of the stuff, as in other manufactories, he employed only two ounces, and that this was the only case which had come to his knowledge in which injurious consequences had resulted from its use. The same witness stated that in France and Belgium they were



not allowed to use arsenic in the composition of candles. Might not the prohibition be extended to England ?\*

5 *Treatment of Cases of Narcotic Poisoning.* In a paper on asphyxia, by Mr. Erichsen, it is stated,† “that undoubtedly one of the most effective plans of treatment, in cases of narcotic poisoning, when complete insensibility has supervened, is, after the stomach has been emptied of its contents, to stimulate by every means in our power the *medulla oblongata* to increased activity, so as to enable the respiratory movements to be kept up in such a way that the blood may be duly aerated; for this purpose we are in possession of no agent at all comparable to slight electric or electro-magnetic shocks passed through the brain and upper part of the spinal cord. Since I published—three years ago—two instances of its successful application, several cases have been reported in the journals; and I have had within the last twelve months another opportunity of testing its efficacy in an almost hopeless case, in which an infant had been poisoned by an overdose of Dover’s powder, and in which the ordinary means, such as the cold affusion, ammonia, &c., had failed in arresting the progress of the narcotism.

6. *Poisoning by Tartaric Acid.* A man, named William Watts, aged 24, a cab-driver, who resided in Rawstorne-street, purchased what he supposed to be an ounce of “tasteless salts,” at the shop of a chemist named Watkins, on Saturday, the 7th of December last. At between five and six o’clock in the evening, having dissolved the white powder which he had obtained in a mug containing half a pint of warm water, he drank off the solution, and instantly exclaimed to his wife that “he was poisoned; that he had a burning sensation in his throat and stomach as though he had drank oil of vitriol; that he could compare it to nothing but being ‘all on fire.’” A practitioner was immediately sent for; a preparation of soda and magnesia was at once administered, and diluent drinks were freely given. Sickness set in, he went to bed directly, violent inflammation of the stomach and intestines ensued, and he did not leave his room again until he was taken out a corpse, the vomiting having never ceased during life. The *post-mortem* examination showed that an intense inflammatory action had been set up throughout nearly the whole of the alimentary canal. The druggist admitted that he had sold tartaric acid in mistake for the tartrate of soda. An inquest was held on the body, and a verdict of manslaughter was returned against Peter Watkins. The bottles labelled “acid. tart.” and “sod. tart.” were standing on a shelf next to each other: to this circumstance the accused person attributed the mistake which he had committed. The examination of the body was made by Mr. William Seth Gill, surgeon, of Clerkenwell.‡

7. *Poisoning by Ergot of Rye. Post-mortem appearances.* A child, 10 years of age, died after having both legs amputated in consequence of gangrene produced by this poison. On opening the body the following appearances presented themselves. The brain was healthy, but the veins of the membranes turgid with blood, and there was a tea-spoonful of rose-coloured serum in each lateral ventricle. The right lung presented the third degree of pneumonia in its lower two-thirds, and the second degree of the remainder. Near its surface there was a single abscess capable of holding a hen’s egg. The left lung presented the first degree of pneumonia. The liver was quite healthy. The veins proceeding from the stumps were quite healthy. A second child, 23 months old, in whom spontaneous amputation of the right leg had taken place, was doing well.§

## § II.—Infanticide.

8. *Case of alleged infanticide, in which it is supposed that suffocation was induced by a quantity of mud having been impacted into the œsophagus, with Remarks.* By J. A. EASTON, M.D., Professor of Materia Medica in Anderson’s University, Surgeon to the Glasgow Police, &c. Read before the Medico-Chirurgical Society of Glasgow, on the 13th of August, 1844.

The facts of this case, as detailed by the medical and other witnesses, are as

\* Historical Register, Jan. 5, 1845.

† Lancet, Jan. 4, 1845.

‡ Edin. Med. and Sur. Jour., Jan. 1845.

§ Gazette Médicale, 13 Janv. 1844.

follows :—A workman discovered in an old quarry what appeared to him to be the foot of some animal sticking up from a quantity of soft mud. The foot, on closer inspection, was found to be that of an infant, of which the head and features could be seen under the surface of the mud. On inspection of the body, it was found to belong to a male child, apparently about three weeks old, stout, well-formed, and obviously not the victim of a protracted illness. The internal appearances were unusual congestion of the liver and lungs, the latter of which viscera were of the deep violet-colour, which is seen in the lungs of those who have died from suffocation. The other organs were natural and healthy. The stomach contained somewhat more than an ounce, by weight, of nearly *solid mud*, and the gullet, throughout the greater part of its length, was blocked up by a similar substance, and a small quantity was likewise found on the tongue and in the mouth. The anterior nostrils contained a little mud, but they were perfectly pervious, while the back part of these tubes, and the larynx and windpipe were free of any obstruction whatever. This statement of the post-mortem appearances is on the authority of the reporter of the case, and Dr. Robert Macgregor. The following is the attested opinion of the same gentlemen as to the cause of death. "After having minutely examined the quarry in which the corpse was found, the position in which it lay, the consistence and the quantity of the mud, we are clearly of opinion that the death of this child must have been caused by the stuffing of the gullet with mud, which must have pressed on the windpipe so forcibly as to cause suffocation." Dr. Easton supports the opinion of the reporter by conclusive arguments. He argues, in the first place, that the mud could not have found its way into the œsophagus and stomach after death; for except in advanced stages of putrefaction, not even water can find its way into the stomach, unless the body be sunk to a considerable depth. In this instance the process of putrefaction had not set in, and the body was found barely covered by mud. Again, if the mud found its way into the œsophagus and stomach after death, why did it also not enter the larynx and trachea, which are necessarily kept open by the elasticity of their cartilages, while the sides of the œsophagus are kept in juxtaposition. Lastly, Dr. Easton contends "that had the mud found its way into the œsophagus and stomach by gravitation, the stomach and lower part of the œsophagus ought to have been found distended, and the upper part, if any part, empty; whereas the stomach contained but a comparatively small quantity of mud, while the œsophagus, in the greater part of its extent, but particularly in its upper half, was stuffed with it. It is much more easy, as Dr. Easton observes, to account for the mud in the œsophagus and stomach on the supposition that it was introduced during life. "The mud being forced into the mouth during life, a portion of it was swallowed during the convulsive struggles of death, and thus was the stomach filled in part, but simultaneously with the extinction of life departed the power of deglutition, and thus the œsophagus,—arrested in the very act of performing its function,—became impacted, while between it and the stomach there remained a distinct hiatus, which unaided gravitation was unable to fill." The spasmodic contraction of the glottis, at the same time prevented the entrance of the mud into the air-passages. Suspicion fell upon a female, whose child about the same age as that of the one found in the mud, had disappeared, and she was arrested, but from the impossibility of identifying the child, or the clothes found upon it, the woman was set at liberty.

Two cases of infanticide, illustrating the inoperative state of the law, have occurred during the half year. In the one the infant was found with a tape tied round the neck; in the other, the head was nearly severed from the body. Both the guilty parties escaped, because it was impossible to prove that the children had been *born alive*.

9. *The Long Tests. Test of pressure.* The value of this test as a means of distinguishing respiration and inflation has been discussed by Dr. Guy in two communications to the *Medical Times*, of which the first bears date Nov. 30, 1814, and the second Feb. 8, 1845. As the latter is but an addition to the former, both may be noticed in this place. In his first communication Dr. Guy

gives a case, on the authority of Dr. Henry Browne, physician's assistant to the King's College Hospital, in which inflation was practised with the effect of freely distending the lungs of a still-born child, and yet on submitting several of the smaller buoyant portions of the lung to pressure, by twisting them between the folds of a towel and kneading them, "they could not be made to sink till reduced to mere shreds." In his second communication two cases are given on the authority of Mr. Hensley, in both of which inflation was practised on still-born infants, with the effect of distending the lungs, though less completely than in Dr. Browne's case. In the first case it is stated that each portion of the lungs floated in water, "nor could any portion be made to sink by repeated pressure, by twisting in a coarse cloth, and even treading thereon." In the second case, the inflated portions of the lung "could not be made to sink by pressure in a cloth, so long continued as to reduce them to mere shreds." An additional case, observed by Dr. Browne, "in which inflation was successfully practised, and pressure unsuccessfully used as a means of discrimination," is alluded to by Dr. Guy, who concludes his examination of the test of pressure by extending his condemnation of it to every possible degree of distention of the lungs. "I have, therefore," he states, "no longer any hesitation in rejecting the test of pressure to whatever extent the lungs may have been distended." If this opinion of Dr. Guy is well founded, the hydrostatic test must be admitted to be no longer of any use; for the floating or sinking of the lungs can teach us nothing more than inspection of the lungs themselves.

### § III.—Insanity.

10. *The Question of Criminal Responsibility* was mooted in the case of James Gibson, a weaver, tried for *fire-raising*, in the High Court of Justiciary at Edinburgh, on Monday the 23d December last, before the Lord Justice Clerk (Hope,) and Lords Moncrief and Cockburn. It would be impossible, under several pages, to give a satisfactory analysis of this case; we must, therefore, refer the reader to the *London and Edinburgh Monthly Journal of Medical Science*, Feb. 1845, where the case is given at length from the notes of the criminal law reporter, the judge's charge being corrected by himself. The case was one of those difficult ones which we may expect to be of frequent occurrence, where the words and actions of a sane man were, both before and after the trial, so mixed up with symptoms of unsoundness as to lead some parties, and among the number one medical witness, to believe that the man was feigning. The evidence of several witnesses, who had known Gibson previous to the fire-raising, was to the effect that they thought him of weak mind, and he was very generally known as "daft" Gibson. It was also distinctly proved that he had been subject to delusions. The evidence of the medical men confirmed the statements of the other witnesses, and eight out of nine medical men, of whom the greater part were either practically versed in diseases of the mind, or prepared by the nature of their studies, and their general talents and acquirements, to form a trustworthy opinion, were in favour of the prisoner's insanity. The judge's charge, in face of this decided balance of opinion, was strongly against the prisoner's insanity, and the evidence of the medical witnesses was undervalued to an extent unusual even in a court of law; while the jury were flattered by being told that they were in a better position to judge of the real state of the prisoner's mind than the medical witnesses, who had repeatedly and most carefully examined him. The jury unanimously found the panel "guilty as libelled," and consequently disallowed the plea of insanity. The case is one deserving of a more minute examination than our space will allow us to devote to it. The judge's charge especially invites comment, and no part of it more than the statement that the question whether the delusions were real or feigned, was "purely a jury question." One of the most difficult and delicate questions in the world purely a question for a jury! If medical evidence be really so worthless, it may not be amiss to state that, in this case, three or four non-medical witnesses, who saw the prisoner after the crime, were distinctly of opinion that he was not feigning. It must be a subject of regret to medical

men that, after being summoned to the witness-box, as if they were prepared to render some service to the cause of justice, their opinions should be so strangely undervalued. It would certainly be more consistent to let the jury, whose penetration seems to be so superior, examine the accused for themselves, or to appoint examiners from the class of men to whom they belong. In this way the profession would at least be saved unnecessary trouble and obloquy. The writer of this has been since informed that James Gibson, prior to the carrying of the sentence of transportation into effect, was lodged at the Millbank Penitentiary, where he had not been more than a day, when the physician of that establishment, with the concurrence of an eminent surgeon, sent him off to Bethlehem Hospital as being decidedly insane. This he did in entire ignorance of the particulars of his case, or the fact that the plea of insanity had been raised in regard to him. Gibson is detained at Bethlehem as a proper subject of treatment.

#### § IV.—*Wounds and Injuries.*

11. *Rupture of the Spleen.* J. W., a robust man about 40 years old, was engaged in a scuffle with B. R., a man of the same size, and received one blow from the fist of his opponent in the left hypochondriac region; the combatants then closed with each other, and so equal were their exertions for 5 or 10 minutes, that it seemed doubtful which would come off victor; at length, however, the strength of J. W. seemed suddenly to fail. He turned pale, staggered, and sank helpless upon the ground, complaining of nausea, faintness, and pain in the left side. He was carried, in a sinking condition, a short distance to a house, where he expired in about 15 minutes after the termination of the conflict. On inspecting the body, no marks of violence were observed on the exterior, but on opening the abdomen, the spleen was found enlarged to about five times its natural dimensions, and so soft in texture as to be easily broken down under slight pressure from a finger. Upon its posterior surface was a lacerated fissure of about five inches in length, extending deep into the centre of the organ. Between two and three quarts of dark, partially coagulated blood, were found in the cavity, and there were about two ounces of effused serum in the pericardium. The coroner's verdict was as follows: "Death from lacerated diseased spleen, caused by a blow, fall, or over-exertion, while engaged in a scuffle with B. R." B. R. was tried for manslaughter, and acquitted by the circuit court.



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24. Analecten für Frauenkrankheiten, oder Sammlung der vorzüglichsten Abhandlungen, Monographien u. s. w. des In- u. Auslandes über die Krankheiten des Weibes u. über die Zustände der Schwangerschaft u. des Wochenbetts. Herausgegeben von einem Verein prakt. Aerzte. Leipzig, 1844.

25. Reform, Zur — der medic. Verfassung Sachsens. Ansichten u. Wünsche ausgesprochen von dem ärztl. Verein zu Dresden. Dresden u. Leipzig, 1845. Arnold. 8. 90 S.

26. Nieberding, Ph., Das Asthma thymicum oder Spasmus glottidis. Eine physiologisch-pathologische Abhandlung. Halle, 1844. 8. Lippert u. Schmidt. 36 S. (¼ thlr.)

27. Mauthner, Ludw. Wilh., Die Krankheiten des Gehirns u. Rückenmarks bei Kindern. Durch Krankheitsfälle aus dem ersten Kinderspital (Wien) erläutert. Wien, 1844. Gerold u. Shon. 8. XII u. 448 S. nebst 5 nach der Natur gez. u. lithog. Tafeln. (¾ thlr.)

28. Baerensprung, F. G. Felix de, Observationes microscopicae de penitiorum tumorum nonnullorum structura. Halis, 1844. 8. 35 pp. et tab. lithogr. (1-3 thlr.)

## BOOKS RECEIVED.

1. The Diagnosis, Prevention, and Treatment of Diseases of the Heart, &c. By Dr. Furnivall.
2. Illustrations of Diseases of the Chest. By Francis Jobson, Esq.
3. The Philosophy of the moving Powers of the Blood. By Calvert Holland, M.D.
4. Glossology. By Dr. B. Ridge.
5. Physiology of the Uterus, Placenta, and Fœtus. By Dr. B. Ridge.
6. The general Nature and Treatment of Tumours. By George Macilwain, Esq.
7. An Explanation of the real Process of spontaneous Evolution of the Fœtus. Third Edition. By S. Douglas, M.D.
8. Practical Observations on the Diseases most fatal to Children. By P. Hood, Esq.
9. Practical Observations and Suggestions in Medicine. By Marshall Hall, M.D.
10. The Medical Remembrancer. By Edward Shaw, M.A.C.S.L.
11. A Practical Treatise on the special Diseases of the Skin. By M. Gibert. Translated by Edgar Sheppard, Esq.
12. Principles of Forensic Medicine. By W. A. Guy, M.D. Cantab. &c.
13. Practical Remarks upon some Exhausting Diseases, &c. By Sir J. Eyre.
14. The Anatomy of Sleep. By Dr. Binns.
15. Urinary Deposits, their Diagnosis, Prevention, &c. By Dr. Golding Bird.
16. Vestiges of the Natural History of Creation.
17. On the remedial Influence of Oxygen, &c. By Dr. Riadore.
18. Lectures on Pulmonary Phthisis. By Dr. Evans.
19. A Collection of Cases of Apoplexy. By Edward Copeman, Surgeon.
20. The Physiology of the Thymus Gland. By J. Simon, F.R.S.
21. Facts and Observations on Medicine and Surgery. By John Grantham, &c.
22. Essay on Cretinism and Goitre. By Edward Wells, M.D.
23. On the Reflex Functions of the Brain. Reprinted from British and Foreign Medical Review, No. 37. By T. Laycock, M.D.
24. Observations on the Nature and Treatment of the more important Diseases of the Nervous System. By Edward Blackmore, M.D.
25. Observations on the Employment of Compression in Aneurism. By O'B. Beltingham, M.D.
26. Twenty-fourth Annual Report of the Dundee Lunatic Asylum. From Dr. M'Intosh.
27. On the Duration of Life in the Families of the Peerage and Baronetage. By Dr. Guy.

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*The following were received too late for notice in the present volume :—*

28. Bridgewater Treatise. By Dr. Prout.
29. Practical Notes on Insanity. By Dr. Steward.
30. On Acute Hydrocephalus. By Dr. Smith.
31. Prize Clinical Reports. By John Moore, Surgeon.
32. Hints to Mothers, &c. By Dr. Toogood.
33. Cases in Surgery. By Dr. Handyside. Reprinted from London and Edinburgh Monthly Journal.
34. Proposals for the Improvements of Diagnosis in Diseases of the Uterus. By Dr. P. Smith.
35. On the Philosophy of Female Health. By Dr. Mason.
36. Observations on Organic Diseases of the Heart. By Dr. Alison.

**HALF-YEARLY ABSTRACT**  
**OF THE**  
**MEDICAL SCIENCES.**  
**JULY—DECEMBER,**  
**1845.**

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HALF-YEARLY ABSTRACT  
OF THE  
MEDICAL SCIENCES:

BEING

A PRACTICAL AND ANALYTICAL DIGEST OF THE CONTENTS OF THE PRINCIPAL BRITISH  
AND CONTINENTAL MEDICAL WORKS PUBLISHED IN THE  
PRECEDING SIX MONTHS.

TOGETHER WITH

A SERIES OF CRITICAL REPORTS ON THE PROGRESS OF MEDICINE AND  
THE COLLATERAL SCIENCES DURING THE SAME PERIOD.

EDITED BY

W. H. RANKING, M.D. CANTAB.

PHYSICIAN TO THE SUFFOLK GENERAL HOSPITAL.

*Apparatu nobis opus est, et rebus exquisitis undique et collectivè arcessitis, comportatis.*  
CICERO.

PART II. VOL. I.  
JULY—DECEMBER, 1845.

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## PREFACE.

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THE Editor is unwilling to allow the Second Part of the "Half-yearly Abstract of the Medical Sciences," to appear without expressing his warmest acknowledgments to his professional brethren, for an extent of patronage which he had not ventured to contemplate. He regards this flattering circumstance as an evidence not only that the profession at large is anxious to be acquainted with the progressive advance of the Science of Medicine, but that the plan upon which it has been attempted to facilitate the acquirement of recent and valuable information has met with its cordial approbation.

In consequence of the liberal support which he has met with, the Editor has been enabled to increase the quantity of matter in the present Volume. He has likewise, at the suggestion of numerous Subscribers, appended a copious index of this and the preceding Number.

In future each part will contain an Index, as well as the Table of Contents.

BURY ST. EDMUNDS: Dec., 1845



LIST OF BRITISH AND FOREIGN PERIODICALS REFERRED TO IN  
THE "HALF-YEARLY ABSTRACT."

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BRITISH.

*British and Foreign Medical Review.*  
*Medico-Chirurgical Review.*  
 " *Transactions.*  
*Transactions of the Provincial Medical Association.*  
*Edinburgh Medical and Surgical Journal.*  
*London and Edinburgh Monthly Journal.*  
*Dublin Journal of the Medical Sciences.*  
*Lancet.*  
*Medical Gazette.*  
*Provincial Medical Journal.*  
*Medical Times.*  
*Dublin Medical Press.*  
*Bell's Pharmaceutical Journal.*  
*Guy's Hospital Reports.*

AMERICAN.

*American Journal of the Medical Sciences.*  
 " *of Science and Art.*  
*Philadelphia Medical Examiner.*  
*New York Journal of Medicine.*

FRENCH.

*Annales de Chirurgie.*  
 " *d'Hygiène.*  
 " *de Chimie et de Pharmacie.*  
 " *des Maladies de la Peau.*  
*Archives Générales de Médecine.*  
*Bulletin des Académies.*  
*Encyclographie Médicale.*  
 " *des Sciences Médicales.*  
*Journal des Connaissances Médico-Chirurgicales.*  
*Gazette des Hôpitaux.*  
 " *Médicale.*  
*Journal de Chirurgie de M. Malgaigne.*  
*Revue Médicale.*

GERMAN.

....

*Schmidt's Jahrbucher.*  
*Zeitschrift für de Gesamte Medicin.*  
*Müller's Archiv für Anatomie, &c.*  
*Liebig's Annalen der Chemie und Pharmacie.*

N.B. Every periodical here specified is consulted *directly* by the Editor and his coadjutors.

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# ABSTRACT OF THE MEDICAL SCIENCES,

&c. &c.

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## PART I.

### PRACTICAL MEDICINE, PATHOLOGY, AND THERAPEUTICS.

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#### SECTION I. DISEASES OF THE NERVOUS SYSTEM.

##### ART. 1.—*On the premonitory Symptoms and Diagnosis of Insanity.*

By JOHN BURDETT STEWARD, M.D.\*

"THE premonitory symptoms of insanity may be divided into two classes, viz., those which evince a predisposition to mania, and those which characterize its approach.

"In the former class, we have hereditary tendency—great natural timidity—a disposition to view all the occurrences of life through an exaggerated medium, leading to unwarrantable depression or elevation—a highly sensitive and delicate feeling.

"In the second class, or those symptoms which portend the approach of insanity, stands first, insomnia, or indisposition to sleep; restlessness—unusual irritability or excitability—abandonment of former habits—inability to follow any fixed pursuit—suspicion and unfounded dread of evil, avoidance of society—self-colloquy—a watchful yet averted eye.

"This combination of symptoms is not, however, immediate. At first a change is noticed in the manners and habits of the individual which scarcely attracts attention; it is felt rather than observed, and seldom elicits more than a passing remark. Gradually this alteration becomes more evident; some or all of the symptoms above enumerated are added; the sufferer is impatient of contradiction or control; he suspects all around him, and resists all attempts to pacify him. Daily he more and more develops his true feelings; the caution which has for a time restrained him gradually diminishes; he takes less and less care to conceal his opinions and impulses; till at length the change becoming too evident to admit of doubt, the individual feels himself as if he were detected, and confident in the truth and justice of his opinions, no longer hides but defends them.

"It is also to be observed, that whatever form insanity may afterwards assume, in its first approach it is almost always accompanied by derangement of the general health; the secretions and excretions are alike unhealthy, the tongue is loaded, and the circulation irregular."

[The proximate symptoms which in fact constitute the disease itself are divided by the author into the latent and the evident, the former requiring a certain train of thought to be hit upon in order to ensure their manifestation, the latter sufficiently appreciable on all occasions. The diagnosis of insanity from the diseases with which it may be confounded is thus stated:]

"The disease most likely to be confounded with insanity is delirium tremens; but the bustling agitated manner, the expression of anxiety generally about matters of

\* Practical Notes on Insanity. London, 1845.

business, the tremulous tongue, supported by the fact of the attack having been preceded by a fit of hard drinking, are ample for the purpose of right judgment."

[Hypochondriasis is thought by the author to be the effect of dyspepsia upon a mind predisposed to insanity, and the distinction is in many cases not easily drawn. Hysteria also resembles insanity in some of its forms, but may be known by the incongruity of the symptoms, the peculiar coating of the tongue, muttering delirium, and above, all by the sound sleep, which generally occurs as in health. To the experienced eye the general appearance of the patient is a sure guide.

From the delirium of phrenitis insanity is distinguished by the absence of fever in the latter, and the state of the pulse, tongue, and surface.] "At the same time we must not forget, that that form of symptomatic mania accompanied by increased circulation through, or congestion in the brain, or its membranes, not only resembles phrenitis but sometimes ends in it. In such cases we can only become acquainted with the true state of the case when the maniacal symptoms subside simultaneously with the removal of the functional derangement." (Pp. 11-22.)

ART. 2.—*On the Prognosis of Insanity.* By C. J. B. WILLIAMS, M.D., F.R.S.

(*Medical Times*, June 21, 1845.)

[In a lecture upon mental diseases, Dr. Williams observes that:]

"With regard to the prognosis of insanity, it may continue only a few days and then cease, and not return again, or it may last for a long period, or for life; and its termination may be either recovery, permanent aberration of the mental powers, or fatuity. The proportion of recoveries varies very much in different establishments, and Esquirol calculates that it varies from one in four to one in two. In England the average is below 50 per cent. in public establishments. In the asylum at York, conducted by the Society of Friends, the average of forty-four years has been 50 per cent.; in the Exeter and the Limerick Asylums, the result for thirty-nine years gives the average of recoveries at 53 per cent. On the other hand, at Hanwell, about which we hear so much, the recoveries are only 22 per cent. for a nine years' average; but this being an asylum for the lower classes, many of these cases have been treated in workhouses and infirmaries previously, and they may be considered to be cases of the worst nature. Recovery sometimes takes place suddenly, and in recent cases it is usually after a sound sleep, or after a spontaneous discharge from diarrhoea; more generally the recovery is gradual with lucid intervals: the age of the patient influences the recovery; the young have a better chance, and in old people few above 60 recover at all. Pinel states that the recoveries take place within five or six months, on the average; and Esquirol remarks, that the greatest number of recoveries take place in the first year. The account given by Dr. Thompson with regard to the York Asylum is, that the recoveries take place within three months of the first attack, in above 50 per cent. Esquirol gives a table of cases not complicated with paralysis, in which, out of 2005, 604 recovered in the first year, 497 in the second year, 86 in the third year, and only 41 in the seven following years. In a few rare cases, recovery takes place after a much longer period. Pinel gives a case of a girl who was mad ten years, and suddenly came to her senses, on the reappearance of the catamenia which had been suppressed. After the first month the disease is apt to become chronic. Sometimes the recovery is complete, the patient being in mind and body as sound as he ever was; but in the greatest number of cases there is a great liability to relapse, and where the disease is not properly removed, the patients, though quite rational, never have the same strength of mind they had previously."

ART. 3.—*On the Medical Treatment of Insanity.* By DR. WOODWARD.

(*American Journal of the Medical Sciences*, April, 1845)

[The following concise observations upon the important subject of the medical treatment of insanity occur in Dr. Woodward's report of the State Lunatic Asylum at Worcester, United States. We shall give the extract nearly in the author's words:]

*Bleeding.* All agree that depletion by general bleeding and active cathartics is not

favorable in insanity. If bloodletting procure relief, it is but temporary, and the excitement generally returns with greater violence than before. *The indications for active depletion are the effect and not the cause of excitement.*

*Cupping and leeching.* Local bleeding, though less injurious than general, cannot be relied on to cure insanity. It is only useful temporarily, in order to reduce excitement, until other remedies can be brought to exert their influence. If there be much determination to the head, cupping may be resorted to, while other means are used to restore the equilibrium of the circulation. In some cases of maniacal excitement, a state of dementia immediately follows excessive venesection.

*Cathartics.* Drastic purging is often even more hurtful than bleeding. The digestive organs of the insane are peculiarly susceptible of disturbance, dyspepsia, vomiting, and costiveness, or diarrhoea, being often troublesome symptoms with them. Drastic purgatives generally aggravate these symptoms when they exist, and produce them when they do not. Constipation is generally to be obviated by mild cathartics; and is far less troublesome than diarrhoea, which is often an obstinate, and too frequently a dangerous symptom when attendant upon insanity. If the secretions of the liver are unhealthy or deficient, blue pill or small doses of calomel may be indicated. These remedies often produce very favorable impressions, and prepare the system for others which may be necessary to remove the insanity itself. In short, cathartics, as such, rarely do good in insanity, but alteratives are often necessary, and in many cases cannot be dispensed with. Tincture of rhubarb, and senna, with aromatics, are valuable remedies of this class.

In torpid states of the intestinal canal, my favorite remedy is the tincture or powder of guaiacum; no remedy has been in my hands more successful than this, in melancholy attended by dyspepsia, and distress after taking food. It invigorates the stomach, acts upon the skin and bowels, and in females is emmenagogue. It may be given in doses from 1 dr. to  $\frac{1}{2}$  oz., three or four times a day in milk and sugar. If the object be chiefly to act upon the bowels, the powder is the better form.

Croton oil in small doses often proves serviceable in the removal of costiveness.

*Narcotics.* This is by far the most influential class of medicines in acute mania, after the system has been duly prepared. It is generally conceded in the present day that the condition of the brain in mania is not inflammation, but rather a high state of nervous irritation. For this state of the brain, narcotics would seem to be the most natural remedies, and experience shows that such is the fact.

*Morphine.* The remedies of this class most extensively useful are the muriate and other similar preparations. The exact time, circumstances, and cases when these remedies can be applied with the greatest benefit, must depend upon the judgment of the practitioner; on this, doubtless, depends their greater success in the hands of some men than in others. The morphine should be administered in solution, the dose proportioned to the urgency of the case. Moderate doses should be tried in the first instance. When the medicine acts favorably it exercises controlling influence over the symptoms, and the patient becomes more tranquil and rational. The time in which it is necessary to persist in the use of this medicine, varies from a few weeks to many months. In the few cases in which it is necessary to administer narcotics in large doses, to produce decided impressions, the tincture of opium is the best preparation. Dover's powder has been used by us when the skin is dry, with the most marked benefit.

It is rare that any benefit arises from single doses of opiates at night, to produce sleep, unless the system be kept under the influence of them the whole time; in violent cases, the doses should be repeated once in four or six hours. It is important to know the symptoms which contraindicate the use of narcotics. When the skin is hot and dry, the tongue furred, or dry and red, the bowels costive, the pupil contracted, and the conjunctival vessels injected, they cannot be used without injury.

*Datura stramonium.* This acts favorably in some cases, disappoints in others, and in some cases aggravates the symptoms. In cases connected with epilepsy, Dr. Woodward has seen excellent effects from this remedy. It is seldom, in a case thus complicated, that the patient entirely recovers, but under the use of stramonium, the symptoms are often greatly diminished in force and frequency. In some cases the epileptic attacks have been entirely suspended; but the medicine must be given in doses sufficient to dilate the pupils and produce some difficulty of vision; the preparation preferred by Dr. Woodward is the tincture of the seed.



*Conium maculatum*. The extract of hemlock either alone or in combination with mineral tonics, has proved useful in some forms of insanity. It is worthy of but little confidence as a means of removing maniacal excitement, but for some forms of melancholy, especially if combined with dyspepsia or neuralgia, it often proves very useful. In cases of melancholy also, complicated with disease of the stomach and torpor of the liver, attended with uneasiness, restlessness, and nervous pains, it is often auxiliary of cure. It may be used in large doses without danger. The minimum dose should be ten grains three times a day, the maximum two or three drachms, as frequently repeated. Dr. Woodward has rarely seen any advantage from less than from fifteen to twenty grains for a dose three times a day, but commonly gives from thirty to forty grains. The efficacy of the extract appears to be increased by its combination with the carbonate or red oxide of iron.

*Hyoscyamus* is a useful medicine in some cases of moderate excitement, and in sleeplessness. In high maniacal excitement, and in the extreme suffering of some cases of melancholy, it is only an auxiliary to the more powerful remedies before considered. Its virtues have probably been overrated, but it is worth a trial in many cases which do not require more potent medicines. I hardly know of a remedy more likely to produce sleep in simple watchfulness, than a combination of hyoscyamus, camphor, and lupuline, from two to five grains of each.

*Nux vomica*. Dr. Woodward uses this medicine in cases of melancholy with flatulence and general muscular relaxation, and combined with the nitrate of silver in neuralgia, epilepsy, and chorea. The first unpleasant symptom arising from its use is a sense of constriction of the stomach.

*Ammonia, ether, aromatics, &c.* These have been found serviceable by Dr. Woodward in low cases of melancholy, and even in cases of excitement, when the skin is cold and moist, with weak pulse and other indications of a languid circulation. "In some cases of recent dementia in which the patient will stand like a statue, with the face fixed to the floor, moving neither hands nor feet, neither taking food nor attending to the calls of nature, strong stimulants, aromatics, and cordials are indicated, and often produce decidedly good effects."

*Tonics*. "In acute mania, after the first excitement is over, tonics are often indicated, and not unfrequently may be used with propriety early in the disease." When the patient is exhausted and feeble, although still excited, quinine bark and often wine are beneficial, used at the same time with narcotics. In melancholy, our principal reliance must often be placed in tonic medicines. Bark, and sulphate of zinc, are often of great service in this form of insanity.

*Baths*. In acute mania the warm bath used frequently, and for a lengthened period, is found by the author to be decidedly beneficial. It is also serviceable in melancholy and chronic insanity, when the skin is in an unhealthy condition. Cold douches to the head, and warm pediluvia, are important adjuvants in the treatment of insanity. The nitro-muriatic-acid bath, the mustard and the salt-water baths are also commended, and where baths are objectionable, frequent ablution with warm water.

#### ART. 4.—On the Treatment of Epilepsy by *Digitalis*.

By D. J. CORRIGAN, M.D., Lecturer in the Dublin School of Medicine.

(*Dublin Hospital Gazette*, May, 1845.)

*Digitalis* (*foxglove*) has been used by the rural districts of Ireland, as a quack remedy for epilepsy, from time immemorial. Its effects, as administered by the fairy-women (as those professing to cure the disease are called), have been so violent, that the profession has shrunk from its administration, although success had in many instances followed its exhibition. The following is the formula which is generally used: Fresh leaves of *digitalis*, four ounces; beat into a pulp, and pour over it a pint of boiling beer; infuse for four hours and strain with pressure. Of this give every third day four ounces, with fifteen grains of dried root of *polypodium*. In another formula the dose is to be repeated every third hour until vomiting is produced. In 1828, Sir P. Crampton informed me that he had superintended its exhibition in four cases, and that in three of these it had been successful, but that he did not venture

beyond the first dose, its effects were so violent. It caused violent and continued vomiting, like that of sea-sickness, which continued incessantly for twenty-four hours, with irregularity and feebleness of pulse that remained for several weeks after.

In the year 1831, Dr. Sharkey, of Cork, in a paper in the *Lancet*, drew the attention of the profession to its good effects in the disease, given according to a similar formula. The effects of a single dose of four ounces, were vomiting, soreness of epigastrium, cold extremities, cramps, and great depression and irregularity of pulse, continuing for several days. I exhibited the remedy myself in the same form, and am not surprised that the profession should shrink from employing it. The first dose produced the most violent vomiting, followed by cold sweat, feeble and irregular pulse, and these symptoms again by intense gastritis, accompanied with great sinking of the vital powers, and double vision, which continued for several days, and were sufficient to deter me from ever again venturing on its administration in such a dose. There are some circumstances connected with the effects of this large dose that may be worth noticing here. It was given at ten o'clock, A. M.; at twelve o'clock the pulse had fallen thirty beats, viz., from eighty-six to fifty-six, and there was headache with very slight nausea; it was not until eight o'clock, P. M., ten hours after the administration of the dose, that the violent symptoms set in. It then occurred to me that, as it is a remedy possessing accumulative property, I might succeed in saturating, as it were, the nervous system with its sedative property, without the risk of inducing those frightful effects which follow on the sudden exhibition of the large dose, and I believe I can now say that this important point in practical medicine can be gained. After many trials of its preparations, I give the preference to the *infus. digitalis* of the Dublin Pharmacopœia; but I cannot too strongly insist on the necessity of the greatest attention being paid to see that the leaves are well prepared, and of the latest gathering; one of the cases narrated will exemplify the necessity of this caution. The mode of administering is to begin with 1 oz. of the infusion every night at bed-time, increasing it after a week to 1½ oz., and after another week, to 2 oz., beyond which it is rarely necessary to go, and continuing it until sickness of stomach and dilated pupils are observed, when the dose is to be diminished by ½ oz. or 1 oz. until the maximum dose that can be borne without inconvenience is ascertained, at which the administration is to be continued for two or three months. Given in this way its exhibition is attended with no inconvenience, beyond an occasional attack of slight sickness of stomach in the morning, or headache, &c., when the medicine is to be omitted, and a day or two are to be allowed to pass over before resuming it. With the exception of these symptoms, there is no perceptible effect beyond the slow action of the heart, and the patient during its use is able to follow his ordinary avocations.

*Case I.*—Mr. M., aged 27, consulted me in March, 1841: he gave me the following history of his case. In the preceding August (1840) he suddenly alarmed the members of his family, by exhibiting himself in the middle of the night in a state of violent mania, which continued for some minutes. From that period up to the present time he has had repeated attacks at night, the longest interval having been once a period of five weeks. These attacks are thus described: his brother, who sleeps in the room with him, is roused by hearing him make a noise in his throat, and this is followed by a suffocative convulsion, in which he awakes in the greatest distress and suffering; he then falls into a fit of general convulsions, and on this ceasing, he remains delirious and ungovernable for some minutes. His tongue to-day bears the marks of having been bitten in an attack which he had last night. For a long time he only suffered from these attacks at night, but lately he became suddenly unconscious, and fell from the desk in the office of a very important public establishment, and this circumstance has aggravated very much his anxiety about his illness; he knows of no cause whatever to which he can attribute these attacks. His appetite is good, his bowels are regular, but his pulse is full, and he has almost constant noise in the head. He had been taking, previously to my seeing him, nitrate of silver, ammoniuret of copper, strychnine, &c., without any benefit. I directed cupping on the back of the neck, and an issue afterwards in it, and desired him to take half a grain of tartarized antimony every night.

He continued this medicine up to the 9th of April; he has had only one slight attack, but he says he feels as if his mind was growing feeble. The tartrate of antimony was discontinued, and he took every night a draught at bed-time of ol. terebinth, dr. j, ol. valerian, gutt. j.

May 2d. There has been no attack since, and his general health is improved. To discontinue all medicine except a lavement when required.

May 12th. He called on me to-day with the bad news that the fits have returned; he has had two within the last ten days. The attacks now return as before, and although all the remedies which previously seemed to benefit him were employed, and various others which it is unnecessary to recount, the disease appeared to be fixing itself more inveterately upon him, the attacks now coming on with great violence every four or five days, and leaving after them heaviness of head, confusion of intellect, and loss of memory. I now felt great anxiety indeed for him, as the loss of his post in a highly important public office seemed inevitable, entailing the destruction of his prospects in life. This was his state in August, 1841, when I ordered him the infus. digitalis of the Dublin Pharmacopœia, in the dose of a wine-glassful every night at bed-time, to be increased if he could bear it; he increased the dose to oz. iij every night, and on August 15th, he called on me with greatly improved spirits; he has had but one slight attack within the last thirteen days.

Sept. 22d. The attacks are now very slight, about one in every ten or eleven days, but preceded often for a day by a frequent desire and inability to pass urine. He had this symptom, however, occasionally before he commenced the use of the digitalis. *The digitalis to be continued in the same dose.*

Oct. 20th. The attacks are now so mild that they do not awake him, there being nothing more than a slight convulsive motion of the throat; he only learns of their occurrence from his brother, who occupies a bed in the same room with him. As the digitalis was not producing its specific effects, I ordered him to take 4 oz. of the infusion for a dose; this produced no more visible effect than the former dose, when an accidental circumstance led him to obtain a repetition of the infusion from a different supply, which must have been much more carefully preserved, for in a few days he was obliged to discontinue its use, and then, on returning to it, to reduce the dose to 2 oz. as at first. In this dose he continued its use for about three months; the attacks of epilepsy gradually became milder and milder, and at length ceased altogether, and I have had the gratification of seeing this gentleman very frequently in good health and spirits; nearly four years having now elapsed without a return of an epileptic attack.

Case II.—On Sept. 8th, 1841, in consultation with my friend, Dr. Neligan, I saw Miss —, aged 27. Without any apparent cause, she was seized whilst on horseback with stupor, and would have fallen from the saddle had she not been supported. Similar attacks frequently returned for the period of a year, and often without any apparent cause to give rise to them; she was then for some months free from them, but they again returned. In these attacks she was conscious, but her feelings during each, though indescribable, were of the most painful kind. Sometimes she would fall, at other times not. After some time the hands and arms became rigid in the attacks, which at last settled down into true epileptic paroxysms, the limbs becoming convulsed, with foaming at the mouth; these attacks were preceded by warning symptoms of ringing in the ears; but these have ceased, and she is now, without any premonitory signs, seized with a fit, while walking or dressing, falls suddenly and is convulsed. The attacks have also latterly become very frequent; she had one on the 25th of August, another on the 1st, and another on the 2d of this month. Her general health has been greatly improved by a trip to Harrowgate; leucorrhœa, to which she had been subject, had ceased, and in the intervals of the attacks she is in the enjoyment of perfect health. We prescribed for her the infusion of *digitalis*, in doses of oz. ij, and ordered *shower-baths*.

Sept. 17th. The draughts produced sickness and occasional vomiting in the mornings; when these symptoms occurred they were omitted for two nights and then resumed; they do not now cause the morning sickness; the appetite and general health continue good, and the only apparent effect of the draught is a lowering of the pulse, which beats now about fifty. There has been only one slight attack, which occurred the morning after the first of the draughts, which proceeded no further than loss of power; the draughts to be continued. Dr. Neligan informed me in October, that there had been no return of the attacks; the infusion of digitalis was continued in the same dose, and was occasionally followed by sickness in the morning, very much resembling sea-sickness, but, as before, there was none felt during the night. The draughts were then discontinued, to be again resumed as before. This case was lost sight of, but the effects of the digitalis, for the short time it was given, were most satisfactory; previ-

ously to using it, the attacks were very frequent, being often of daily occurrence, while on commencing the remedy they almost immediately ceased, and did not return as long as the case was under our observation.

[We believe that the epileptic cases in which foxglove proves most beneficial are those in which there is much arterial excitement; but as this is *not generally present*, we fear the remedy will *not* be found *generally useful*. In our own experience we have found indigo one of the most satisfactory specifics; but it, like all other remedies in this disease, occasionally proves of no avail, either as a curative or palliative agent.

The following, among other authors, have written on the employment of foxglove in epilepsy: Dr. Percival, in a paper on Turpentine in Epilepsy (*Edin. Med. and Surg. Journal*, vol. 9, 1815, p. 271-276); Mr. Roger W. Scott (*Edin. Med. and Surg. Journal*, vol. 27, 1827, pp. 19-29); Dr. Currie (*Memoirs of the Medical Society of London*, vol. 4).]

ART. 5.—*On Headache, accompanied by Alkaline Urine.* [Dr. Sherman describes this species of headache in the following words:]

Another malady of not unfrequent occurrence, may be allowed to be mentioned here: a peculiar form of *headache*, accompanied with alkaline urine, of the specific gravity of from 1,015 to 1,030, depositing *triple phosphates* and *phosphate of lime*; with a *deficiency of urea*. The headache is described as a dull, weary pain, affecting the memory and imagination; there is uneasy sleep, often conjuring up unusual sensations and ideas. The appetite continues good; bowels regular; tongue clean; pulse quick and often feeble; but a great feeling of debility attends this form of headache.

I imagine, in this disease, that there is *just sufficient urea circulating in the blood to derange the brain*, and that this is the *sole cause of the headache*; for as soon as the kidneys return to health, and separate the whole of the urea from the blood, the pain ceases.

Instead of giving purgatives, using local bleeding, blistering the back of the neck, &c., I think the best mode of treating this affection is to give animal food, good sound porter, light tonics, with nitric and muriatic acid; merely attending to the secretions and excretions, without using any decided alterative course of medicine. I have met with several such cases, which have soon yielded to this simple mode of treatment; and I think this is the class of headaches, cases of which are sometimes quickly cured by tonics and stimulants, prescribed at random, after the failure of an antiphlogistic mode of treatment.

*Provincial Med. and Surg. Journal*, Aug. 19.

## SECT. II. DISEASES OF THE RESPIRATORY SYSTEM.

ART. 6.—*On Œdema of the Glottis.*

By M. DE LESIAUVE, Physician to the Bicêtre.

(*Annales de Chirurgie*. Nov. 6th, 1844, and March, 1845.)

[Laryngitis œdematosa, commonly known under the name of "œdema of the glottis," consists in the infiltration of serous or sero-purulent fluid in the submucous tissue of the larynx. The disease occupies especially the borders of the glottis, and the fold of the membrane covering the arytenoid cartilages, in which situation the cellular tissue is more than ordinarily lax. It was known to the ancients, and is described by both Hippocrates and Aræteus; in later times it has occupied the attention of Bayle, Bouillaud, Cruveilhier, &c. Bayle distinguishes two forms of œdema of the glottis, one idiopathic and arising spontaneously, the other consecutive and subordinate to some other laryngeal affection.

M. Bouillaud denies the existence of the idiopathic form, and regards the disease in all cases as distinctly inflammatory. MM. Legroux, Troussseau, and Belloe\* partake of the same opinion, and believe that idiopathic œdema of the glottis is an exceedingly rare affection.

\* Mémoires de l'Académ. Royale de Médecine, t. vii., p. 1.

Cruveilhier is still more exclusive, and rejecting the term *œdema* of the glottis, he describes the malady under the name of "sub-mucous laryngitis." MM. Bricheteau and Vidal (de Cassis), and, in fact, the majority of the pathologists of the present day, regard the disease in the same point of view, affirming that it depends in all cases upon inflammation, either primary or consecutive.

The author regards the *œdema* as unconnected necessarily with inflammation, and, therefore, subscribes to the opinion of Bayle, that there is one form of the disease which is idiopathic, and independent of inflammatory action. He treats of the causes of the affection in the following order]:

**Predisposing Causes.** 1st. *Age.* With the exception of two cases, one of which was 8 years, and the other 7½ years old; all the instances occurring in the author's practice were adults. The majority were between the ages of 18 and 54.—2d. *Sex.* Lisfranc affirms that females are more liable to this disease than males. The author's observations falsify this: of 35 cases, 22 were men and 13 females.—3d. *Employment.* This is mentioned in 28 cases; among these sedentary occupations predominated; they were as follows: tailors, 1; shoemakers, 2; cook, 1; washerwomen, 2; sempstresses, 2; porter, 1; soldiers, 3; students, 2; laborer, 1; stone-mason, carter, and lawyer, each 1; and lastly, hospital nurse, 1.—4th. *Season.* The influence of season is difficult to determine; notes of this were taken in only 23 cases; of these, 3 occurred in January; 1 in February; 1 in March; 3 in May; 3 in June; 2 in July; 2 in August; 3 in November; and 3 in December.—5th. *Prior Disease.* A previously deranged state of health is a marked predisposing cause of this disease. Of 37 cases, 34 occurred in the course of other ailments. Of these, 7 occurred during continued fever; 2 in bronchitis; 2 towards the close of cardiac disease, with general dropsy; 2 during the desquamation of scarlatina; 2 in articular rheumatism; 1 after confinement; 1 as a consequence of severe uterine disturbance; 9 were the subjects of habitual cough; 3 were syphilitic; and lastly, in two there was considerable swelling and disorganization of the larynx and neighboring structures.

**Exciting Causes.** Cold is, according to all writers, the most frequent exciting cause. Of 8 cases in which the circumstance was mentioned, this agent was accused in 6. M. Lisfranc places the abuse of mercury among the causes of the disease. In one of the author's cases the affection appeared to be induced by mercurial fumigations.

**Progress of the Disease.** The duration of *œdema* of the glottis is indeterminate; generally, however, it proves fatal within the first week, unless the means employed are successful. The invasion may be sudden, but usually the access of suffocative dyspnoea does not occur until some time after the patient has complained of pain in the region of the larynx. The attacks of dyspnoea are very variable, both in severity and in the period of their occurrence; in some cases the paroxysm lasts five or six minutes, or even longer. As the fatal termination approaches, the duration of the paroxysms increases, and they become more violent. Symptoms then arise which indicate imperfect aeration of the blood, and the patient dies asphyxiated. In favorable cases the intervals between the paroxysms of dyspnoea gradually become longer, and in some instances a crisis puts an end to all danger.

**Symptoms.** The symptoms chiefly arise out of the obstruction to respiration; it is seldom that fever either precedes or accompanies the disease. 1st. *Pain.* The first symptom is generally pain of variable character; the patient has the sensation of a foreign body in the larynx, which he endeavors to dislodge by violent expiratory efforts.—2d. *Cough.* To the pain is added generally, but not universally, cough. This is generally short and dry.—3d. *Alteration of the voice.* This is one of the most remarkable of the symptoms. It becomes hoarse, stifled, and gradually more and more feeble, a phenomenon which depends not merely upon a narrowing of the laryngeal canal, but upon the loss of elasticity in the tumefied parts.—4th. *Respiration* becomes more and more short and hurried, especially in the night; at length suffocative dyspnoea, with paroxysms, occurs; as was remarked by Bayle, although inspiration is difficult, expiration is comparatively easy.—5th. *Deglutition.* This function is in general unaffected; sometimes, however, it is painful, but in such cases there is usually an extension of inflammation to the pharynx.—6th. *Expectoration.* This symptom has attracted but little observation, the secretion being for the most part scanty, and easily expelled.

[With this brief account of the symptoms of the disease, the author passes on to the consideration of the anatomical appearances. Bayle has remarked the persistence of the animal heat long after death, as a phenomenon coincident with the fluidity of the

blood contained in the large vessels. The same phenomenon has been noticed by the author, but he does not venture upon an explanation of it.]

The oedematous infiltration sometimes appears in the form of a round, shining, pellucid ring, which may be either tense or flaccid, and somewhat gelatiniform. The contained fluid differs considerably in different cases. It is seldom found to be clear and serous, but most commonly consists of plastic lymph, which cannot be expelled without great difficulty. The seat of the infiltration is in those parts in particular which are below the rima glottidis, such as the chordæ vocales, the arytenoidean folds. The effusion is not, however, in all cases limited to these parts, but may extend both above and below. Thus the epiglottis on the one hand, and the mucous membrane of the upper part of the trachea on the other, may be implicated in the disease.

Independently of these lesions, which are peculiar to the disease in question, there are others which are in a measure the effects of the malady rather than of necessity connected with it. Such are the vascular injections and the ulcerations situated on the surface of the epiglottis; the erosions, ossifications, and caries of the cartilages; the abscesses, vegetations, &c., often found upon the chordæ vocales; and lastly the purulent and gangrenous deposits which are sometimes discovered among the muscles external to the larynx.

*Diagnosis.* As the author observes the differential diagnosis of oedema of the glottis is a point of great importance. The affections most likely to be confounded with it are acute laryngitis, croup, laryngeal phthisis, syphilitic vegetations, polypus of the larynx; aneurism of the aorta, tumors situated in the course of the trachea, enlargement of the thymus (?) and retro-pharyngeal abscess. In addition to these, Bayle enumerates angina pectoris, and the crowing respiration of infants.—1. Acute laryngitis, and angina oedematosa, are thus distinguished by the author. The pain in the former is severe and tearing; that of the latter is less acute, and is rather an inconvenience than actual pain; in laryngitis the expiration remains free, and those accessions of suffocation so common in the oedematous form, are not observed excepting in some few cases of unusual severity. The fever, moreover, precedes and accompanies the former, but is seldom observed in uncomplicated oedema glottidis.—2. Croup is a disease of infancy. Angina oedematosa, on the contrary, is rare at this period of life. In the former, the cough is harsh and ringing, the voice peculiar, the respiration whistling; in the latter, cough is not frequent, the voice hoarse and almost extinct, the inspirations are more convulsive, and less sonorous.—3. It is not easy to confound laryngeal phthisis, with oedema of the glottis; the voice is hoarse and feeble in both, but in phthisis those paroxysms of suffocative dyspnoea which mark the latter disease, are not observed.—4. Venereal affections of the throat may be recognized by their being in general accompanied by other syphilitic symptoms, as blotches, nocturnal pains, &c.—5. Polypi of the larynx are not common, but when they do occur, are difficult of diagnosis. In some cases, their true nature cannot be ascertained until after death. The same may be said of laryngeal vegetations.—6. Foreign bodies in the larynx are generally the result of an accident, the occurrence of which may be clearly ascertained; if it were not so, the violent irritation which they produce, the sensation of a body moving up and down the trachea, the constant sensation of imminent suffocation, sufficiently mark the true nature of the case.—7. Retro-pharyngeal abscess may readily be mistaken for oedema of the glottis; there is, however, one sign, namely difficulty of swallowing, which will serve to distinguish the two affections. All doubt may in general be removed by careful examination of the pharynx by the finger, when the site of the abscess will be clearly ascertained.—8. The convulsive asthma of infants offers considerable analogy to the disease in question, but a mistake may be avoided by the consideration that oedema of the glottis is not a disease of infancy, and that the spasmodic asthma has periods of perfect remission, which is not the case with the former disease.

*Prognosis.* Oedema of the glottis is a severe disease, but not an inevitably fatal one. The author saved fourteen cases out of forty-eight. The disease is more to be dreaded in proportion as the patient is debilitated, either by the disease, or by previous circumstances. The occurrence of inflammation is a severe complication.

*Treatment.* In the treatment of this disease, the author recognizes two periods, one in which the chances of cure are not remote, the other in which the disease must inevitably prove fatal, unless certain extreme measures are adopted. In the first period, the remedies most commonly employed, are bloodletting, emetics, purgatives, opiates, astringent gargles, &c. The author places but little confidence in bleeding, as might be ex-

pected from the foregoing views of the pathology of the disease; in this he differs from the majority of writers. Emetics are highly prized by him, as also are opiates; he also places great confidence in the production of ptialism, by means of stimulating gargles. The action of mercury is considered by him to be too slow. The author refers also in favorable terms, to scarification of the oedematous ring, which is seen to surround the glottis, and cites the authority of M. Lisfranc in its support. The latter surgeon by this means cured six out of seven, in which it was adopted. The mode of performing the operation is as follows: "The jaws being kept apart by a suitable contrivance, a curved bistoury guarded to within a line of its point by lint, is guided to the part by the two fingers of the left hand, and a few distant scarifications are made."

The second period of the disease above alluded to, that in which all less hazardous remedies have failed, calls for the performance of the operation of tracheotomy. In order, however, that the operation should be successful, the author reasonably exclaims against its being delayed until death by asphyxia is imminent. The mode of operation preferred by the author, is the division of the crico-thyroid membrane, because by choosing this spot, we not only admit of the patient's respiring, but we are able at any subsequent time, as was pointed out by Vidal (de Cassis), to scarify the diseased parts by passing the bistoury upwards.

[The same disease has been lately made the subject of a memoir presented to the Academy of Medicine by M. Valleix. The following remarks upon prognosis appear to us to be exceedingly judicious:]

"In pronouncing upon the degree of gravity from the symptoms observed, each case must furnish its own elements for decision. In a general manner we can only say, that if the strength yet continues, the pulse is regular and not deficient in power, if the features are not much changed, and the face is not livid; if the efforts to inspire are as yet energetic, and if the wheezing or other noise is heard in the larynx, with sufficient power to show that the air penetrates the lungs, we may have hopes that the disease will terminate favorably. If, on the other hand, the patient is prostrated; if his features are changed, his lips blue, his eyes haggard, his face cadaveric, if he has no longer the power to make effective respiratory efforts, if the inspiratory '*sifflement*' have lost its energy, without respiration becoming deeper and easier, we must not allow an apparent calm to deceive us, for the patient is devoted to a speedy death."

*Notice in Medico-Chirurgical Review, July, 1845.*

#### ART. 7.—On the Differential Diagnosis of Pneumonia. By M. ROSTAN.

(*Gazette des Hôpitaux.* No. 65.)

"Inflammation of the parenchymatous structure of the lungs may attack indifferently any portion of those organs. In the onset of the disease, their density is not materially altered, but their tissue is seen to be red and injected. If the thorax be percussed in this stage of the malady, no difference will be perceived in the sound as it occurs in a perfectly healthy person. As the disease progresses, however, very important alterations take place in this respect; the sound becomes dull, but not to the extent to which it arrives in pleuritic effusion. If the lung should subsequently pass into the condition known as 'grey hepatization,' the dullness of the sound is still further increased."

"The natural sound produced by the entrance of air into the lungs, need not be here insisted upon, as it is perfectly well known; we shall therefore pass on to consider the changes which it undergoes in pneumonia, and to contrast it with those of other affections for which the latter disease may be mistaken.

"In pleurodynia, the respiratory murmur is not different from that of health. Neither does it undergo any change in the early stage of pleurisy. If, however, effusion have taken place, this sound is no longer normal. It becomes rough, and at length degenerates into the veritable bronchial '*whiff*,' louder in proportion as the effusion is more considerable. We particularly call attention to this point; as this sound has been in general considered as confined to pulmonary hepatization. It is not so, however, but as we have stated is also heard in pleuritic effusion. How then are we to distinguish the one case from the other?

"In pneumonia the respiratory murmur is always more or less mixed up with the

crepitous râle, a sound which is characteristic of the first period of the disease, and is heard in no other, if we except perhaps the case of simple pulmonary congestion. As the disease advances this râle and the vesicular murmur decrease and finally disappear, and their place is supplied by the tubar or bronchial respiration. The circumstance which distinguishes this form of bronchial respiration from that which depends upon pleuritic effusion is this, that the fine crepitation of the earlier stage of pneumonia may always be heard at a greater or less distance from the spot in which the 'whiff' is produced.

"If the bronchial tubes alone be the seat of the inflammation, the râles produced are subcrepitant, that is, are distinguished by large bubbles instead of the fine crackling of pneumonia; they are at other times hissing or snoring, and are heard both with the inspiration and the expiration.

"The auscultation of the voice gives likewise certain results by which the presence of pneumonia may be detected. It is loud and resounding, as if the patient spoke directly into the ear; this, however, is confined to the spot at which the respiration is bronchial. In pleuritic effusion the voice is also louder than natural, but it has a peculiar tremulous intonation whence it has been termed *ceophony*, from its resemblance to the bleat of a goat. We must allow, however, that this latter sound is not to be depended upon as diagnostic between pleuritic effusion and hepatization of the lung, for the voice has occasionally the trembling character in the latter.

"Independently of auscultation, some importance in diagnosis is to be received from a consideration of the general symptoms, as the state of the pulse, heat of the skin. The latter sign is one of considerable import, for although it accompanies all forms of inflammation, it is remarkably pronounced in inflammation of the substance of the lung. The tongue is generally white and furred, with a red point, and the urine high colored.

"In pleurodynia, although the pain is very acute, the system does not sympathize, the pulse remains quiet, and there is no febrile disturbance.

"In pleurisy with effusion, the general symptoms appear to be in inverse ratio with the local mischief, a circumstance which is almost peculiar to that disease. From this fact alone, we have frequently been able, without the aid of auscultation, to determine between dullness on percussion arising from effusion, and that depending upon pulmonary hepatization."

#### ART. 8.—*On the Iodide of Potassium in Pneumonia.*

By GEORGE L. UPSHER, M.D., Norfolk, Virginia.

(*Philadelphia Medical Examiner.*)

[In our First Volume (*art. 17, p. 25*), we have briefly noticed Dr. Upsher's earlier experience of the powers of the above medicine; the article which we here reproduce, contains a statement of his subsequent experience.]

Case I. John Fisher, a lad aged 16, of a delicate frame and lymphatic temperament, previously healthy, after exposure to heavy rain, was seized on the evening of January 8th, 1844, with severe rigors, which were followed by high febrile action, with a hacking cough and sense of tightness across the chest. I saw him at noon next day, when his condition was as follows: passed a restless night; feels much debilitated; lies upon his back with the shoulders raised; respiration 45 per minute, but performed without pain; cheeks flushed, and nostrils dilated; pulse 120, soft and full; skin hot and dry; bowels disposed to looseness; cough very troublesome, and expectoration consists of tenacious mucus; much thirst; appetite impaired, and countenance anxious. Physical examination of the chest gave dull percussion over the lower lobe of the right lung posteriorly, with very distinct crepitant rhonchus, and an expiratory sound. The percussion over the left lung was clear, and the respiration merely puerile.

*Prescription.* C. C. posteriorly over the right lung; and one of the following powders every hour:  $\mathcal{R}$ . calomel, gr. x; pulv. ipecac. gr. v. M. div. in chartulas viii.

Jan. 10th. More dyspnea; inclined to sleep, but is prevented by the cough; expectoration to-day exhibits some rusty streaks; respiration 47 per minute; pulse 112 and jerking; tongue dry with a dark coating posteriorly; not as much thirst as yesterday; bowels were acted on four times in the night; complains of no pain, but when questioned, says he "feels very sick." Physical signs as yesterday, except that the expira-



tory sound in the lower lobe of the right lung is more distinct. Prescribed ant. potass. tart. gr. ij, tr. opii. camph. f. dr. ij, aquæ f. oz. iv. M. A tablespoonful every two hours. In the evening there was an exacerbation of fever, and the solution having excited vomiting, was given in half the original dose.

On the 11th, the patient's condition was little altered. The tartar emetic was disposed to run off by the bowels, and therefore was discontinued for the present, and the chloride of mercury, in doses of one grain every hour, was substituted in its stead. The sputa were more *rusty*, and in the diseased lung the crepitant rhonchus had almost entirely disappeared, while the blowing respiration was heard very distinctly.

During the five days following, the condition of the patient was not materially altered, and the treatment consisted in the cautious administration of the tartar emetic, alternated with mercurials. On the 17th, the pulse was only 103 per minute, and extremely feeble; the respiration 30, and performed with difficulty; the cough troublesome, and expectoration, consisting of pus, sometimes marked with bloody striæ, was very abundant. In addition to the dull percussion and bronchial respiration, there was now and then heard a crackling sound, as if the air was forced through a tenacious fluid. *Prescription.* Emp. canth. 4 in., hy. 6 in., posteriorly to the right side. M. Potassii iodidi ser. j, infus. humuli f. oz. viij. M. A wineglassful every eight hours.

On the 18th, he was yet more feeble; pulse as yesterday, but with less volume; tongue dry, and covered with a brown crust; the blister, which remained on eight hours, drew but little; dyspnoea so great as to oblige him to be propped up with pillows; bowels very loose, the evacuations being watery. Ordered wine-whey, tincture of kino in doses of thirty drops every half hour, until the alvine evacuations ceased; continue iodide of potassium.

19th. Rested well last night; cough troublesome only at times; feels stronger and desires something to eat; pulse 95, soft and fuller than yesterday; respiration 25, but accompanied with some dyspnoea; one evacuation from the bowels during the night; percussion still very dull, and respiration bronchial, with harsh submucous rhonchus. Took about two ounces of wine-whey, and one and a half drachm of the tincture of kino. Continue the iodide of potassium in doses of gr. v, every six hours, administered in f. oz. ij, of infusion of hops.

On the 20th, the patient was decidedly better, and, it might be said, was on the verge of convalescence. On the 21st, private business called me from the city, and I requested my friend Dr. W. J. Moore, to attend the case for me. He continued the use of the iodide of potassium in the same doses as I had prescribed it, and the patient convalesced so rapidly, that he considered further attendance useless, after paying the fifth visit.

*Case II.* Mrs. M., aged 30, the mother of three children, and a woman of a vigorous constitution, was taken ill on the 22d of Feb., 1844, with ague, followed by fever. Thinking her disease only a slight catarrh, she did not send for me until the 26th, when I found her laboring under high febrile excitement, cough and dyspnoea. Upon examining the chest, I detected crepitant rhonchus diffused through the lower lobe of the left lung. The percussion there was but little duller than natural, and the expiratory sound scarcely discernible. Her bowels were constipated; skin moist; anorexia complete; expectoration scanty; some headache; decubitus on the back. The pulse was 110 per minute, small and compressible; the respiratory act was so interrupted by the cough, that the number of respirations per minute could not be accurately determined; the average, however, amounted to about 35. Ordered cupping to the left side posteriorly, and one of the following pills every hour: R. Calomel gr. x, tartar emet. gr. iss, syr. simp. q. s. M. div. in pil. viii.

27th. No material change. 28th. On this day the patient became worse, complaining of a heaviness in the præcordial region, and difficulty of drawing her breath. The action of the heart was diffused and labored, giving the pulse at the wrist an intermittent character. Upon applying the ear to the breast, an intense "bellows-sound" was heard. The respiration in the diseased portion of the left lung was decidedly bronchial, and the percussion dull. It will be perceived from these symptoms that the pneumonia had passed from the first into the second stage, and also had become complicated with endocarditis, a complication not uncommon in pneumonia, and the intensity of which often masks entirely the original disease. *Prescription.* Cupping to the præcordia. R. Potass. nitrat. gr. xl, tinct. digitalis gtt. xlv; aquæ f. oz. iv. M. A tablespoonful every two hours.

This mixture was exhibited, with now and then an intermission, until March 2d,

when it was entirely discontinued, and cupping-glasses were again applied to the region of the heart. The action of the heart was more regular than on the day the cups were first applied, but the "bellows-sound" still existed. There was no alteration in the inflamed lung, though the dyspnoea was not so urgent, nor the cough so harassing. The sputa were transparent, and so viscid that they would cling to the bottom of the vessel when it was turned down. Pulse 100, feeble; mouth dry, and tongue coated with a dark fur; patient somewhat deaf and very drowsy; bowels constipated; blisters applied to the ankles, and one drop of oleum tigllii given internally. March 3d. Croton oil acted copiously, and the cantharides plasters vesicated well, which relieved the drowsiness entirely, and the patient says she feels more comfortable than usual. On the 4th, there was a sudden change in her condition. She was extremely feeble; pulse soft, irritable, almost fluttering; respiration obstructed, and in the left lung, lower lobe, a harsh mucous rhonchus, accompanying the bronchial respiration; cough very frequent, and expectoration abundantly purulent. I ordered a decoction of senega, and infusion of serpentaria combined and exhibited in doses of a wineglassful every hour. Under this treatment the patient rallied, and continued to expectorate with considerable ease until about noon on the 5th, when the influence of the remedy seemed to be lost, and the depression of the vital powers again approaching. Wine-why was now exhibited, but it only accelerated the pulse, without adding to its volume, or increasing the patient's strength. As a dernier ressort, I now prescribed the iodide of potassium, in the same dose, and in the same manner as prescribed in the case of John Fisher, detailed above. In twenty-four hours from this time there was an evident improvement in the condition of the patient. She was stronger; the pulse was fuller and stronger, and the expectoration much more easily performed. This treatment was continued, and the appetite returning in three or four days, a nourishing diet was directed to be taken, and the patient was perfectly well on the 17th of March, with the exception of slight cough, and a roughness of the first sound of the heart. The roughness still exists, after the lapse of more than a year, and as it is probably dependent upon thickening of the aortic semilunar valves, it may remain for some time to come. The patient, however, in other respects has enjoyed perfect good health up to this time.

*Case III.* The subject of this case is Mrs. B.—who was taken ill about the middle of April, 1844, but owing to my absence from the city at that time, I did not see her until the 25th. From the account she gave of her situation, she had been laboring under pneumonia of the lower lobe of the right lung, which was ushered in by the usual symptoms of chill, fever, cough, and oppression of respiration. She had taken only a cathartic of senna and manna, and had drunk copiously of flaxseed tea. The following were her symptoms at my first visit. Pulse 95, and feeble; respiration somewhat difficult; expectoration abundant, and consists of pus floating in a glairy mucus; no appetite; bowels opened regularly once a day. *Physical signs.* Percussion clear throughout both lungs, except over the lower lobe of the right, where it is perfectly flat. Respiration over this lobe intensely bronchial, with crackling and submucous rhonchus. I ordered a blister to the diseased portion of the right lung, and the iodide of potassium internally, as I had heretofore prescribed it. It is useless to pursue the details of the case further. Suffice it to say, that every symptom of disease was rapidly ameliorated, and the patient in ten days returned to her household duties. She has been perfectly well since that time.

*Remarks.* As stated in my first communication on this subject, I do not attempt to explain the *rationale* of this mode of treating the suppurative stage of pneumonia. It suggested itself in the first instance, when every other treatment had proved abortive; and its prompt beneficial effect, in that case, recommended it in the management of similar cases which subsequently came under my notice. Iodine is certainly more rapidly alternative than any other therapeutic agent, and in addition to its alterative action, the experiments of Jörg, according to Dr. Dunglison, go to establish the fact that it produces a decidedly stimulant effect upon the respiratory organs. This stimulant impression is much needed in the suppurative stage of pneumonia, a period which is usually characterized by subsidence of inflammatory action, and great debility of the respiratory function. Lygol and Eager both observed, that the appetite and nutrition both rapidly improved under the use of iodine and its preparations, an effect which is greatly to be desired towards the termination of so acute an affection as pneumonia. To conclude: if I were disposed to hazard a conjecture upon the *ratio medendi* of the

iodide of potassium, when administered in the third stage of pneumonia, I should say: 1st, that it tends to promote the absorption of the coagulable lymph effused into the parenchyma of the lungs during the second stage, the breaking down of which lymph into pus serves to keep up the harassing cough and hectic irritability of the third stage, both of which are so often prolonged for a considerable time after all inflammatory action has ceased. 2d. That it is directly stimulant to the lungs at a time when they most need a stimulus. And 3dly, that it invigorates the digestion, and promotes nutrition, thereby rapidly restoring the enfeebled frame to the normal condition of health.

ART. 9.—*On a New Diagnostic Sign in Phthisis Pulmonalis.* By C. M. LATHAM, M.D., Fellow of the Royal College of Physicians, &c.\*

[The following remarks are extracted from the third lecture upon *Subjects connected with Clinical Medicine*, the first volume of which has recently appeared. The physical sign alluded to is thus described:]

"I must here find a place for noting a certain auscultatory phenomenon, which, though it may not have struck the general observation, is frequent and familiar to my own, and has gained an importance in my eyes, from the pathological conditions with which I have found it associated. To the ear it claims kindred with endocardial murmurs, but although the heart may be instrumental in producing it, it is not at all perceived in the præcordial region, but in a certain definite and circumscribed space beyond it.

Fancy a line drawn from the left side of the sternum along the upper edge of the second costal cartilage, and continued an inch along the second rib; and another line drawn from the sternum along the lower edge of the third costal cartilage, and continued an inch along the third rib. Between these two lines a space is included, in the whole or part of which a murmur is often audible, coincidently with the systole of the heart, when no such murmur can be perceived either in the præcordial region, or in the course of the aorta, or in the carotids, or in any part of the arterial system, but here and here only. It is a gentle bellows-murmur, quite obvious to the ear, and unmistakable in its character.

Of such a murmur, often heard in this situation exclusively, I am certain as a matter of fact, and certain too of its very remarkable accompaniments. I have witnessed it either in those who were undeniably consumptive, or in those who were too justly suspected of being so. I cannot say in what proportion of the phthisical it occurs, but I am continually meeting with it.

[The author further states that his knowledge of this symptom is entirely clinical; he has had no light thrown upon it by dissection. He does not hesitate, however, to look upon it as a strong confirmatory sign of phthisis in otherwise doubtful cases.—P. 64.]

### SECT. III. DISEASES OF THE CIRCULATORY SYSTEM.

ART. 10.—*On some forms of Functional Disorders of the Heart.* By D. J. CORRIGAN, M.D., Lecturer in the Dublin School of Medicine.

(*Medical Times*, July, 1845.)

[The first form of functional disorder of the heart, noticed by the lecturer, is one of every day occurrence, and is known under the name of "chlorotic palpitation." It is thus described:]

"A patient who has been for some time affected with chlorosis, presents herself to you laboring under the following symptoms. Anæmia, characterized by the bloodless, tallowy appearance of the surface of the body; cough, oppressed breathing, dyspnoea, emaciation, loss of muscular strength, anasarca feet, and effusion perhaps into the cellular tissue of the body. To these symptoms, alarming enough in themselves, are

\* Lectures on Subjects connected with Clinical Medicine, vol. i.

added palpitation of the heart, and bruit de soufflet. Here we have a train of symptoms alarming enough to induce us to suppose our patient laboring under organic disease of the heart. We find these palpitations increased on taking exercise, and sometimes accompanied by pain in the region of the heart. Have we any characteristic mark by which we can distinguish whether the above train of symptoms denotes organic disease of the heart or not? Yes. Although the other signs might readily deceive us as to its existence, yet by carefully examining the bruit, we can from it discover a means of arriving at the wished-for conclusion. The bruit, from the peculiarity of its sound, in these cases has been by the French writers termed *bruit de diable*. The sound closely resembles that produced by the schoolboy-toy (with which I am sure you are all familiar), made of a piece of iron, or stiff leather, nicked at the edge, and strung on a cord by a hole through its centre. This, on being twirled through the air pretty briskly, produces a peculiar sound. The bruit here differs from that in organic disease in the following particular: in organic affection the beats of the pulse being 50, 60, 70, 80, or 90 in a minute, the number of times the bruit is heard, will tally exactly with this, except in cases of permanent patency of the aorta, when the sound of the returning portion of blood causes double bruit. In chlorotic palpitation, no matter what the number of palpitations may be, the bruit does not correspond with them. You cannot count the number of times in which you hear bruit de soufflet in this affection. There it goes on continuously, whirling away for one half, one, two, three, or ten seconds; there is no intermission in it as in organic disease; *it may hold on thus for half a minute or a minute, but during this time there is no cessation*. In this distinction we possess a never-failing criterion between functional disorder and organic diseases of the heart. In the chlorotic bruit de soufflet you can hear this sound also in the internal jugular vein, when the stethoscope is applied to the neck, this sound proceeding here from exactly similar physical causes as those which I have detailed in the lecture explanatory of the causes which operate in producing bruit de soufflet. In the disease before us we have the physical cause acting in full force, which is absolutely essential in producing this sound, namely, an incomplete distension of the large vessels with blood, owing to the deficient supply of it in the system. But you must bear in mind, that in a person of perfectly sound heart, and enjoying excellent health, you may have bruit de soufflet present, from some cause or other, of only momentary duration.

The treatment of this chlorotic palpitation may be divided under two heads: 1. To remove the constipated state of the bowels which always exists here, by means of purgative medicines, which are supposed to exert some specific stimulus on the uterus; of this class I think aloes the most preferable. 2. To improve the general state of health by the administration of a full diet of animal food, a moderate allowance of fermented liquors, by taking a sufficiency of exercise; walking, if possible, is to be preferred; and by the use of medicines, which are supposed to possess the property of promoting materially the formation of red blood, *chalybeates*, for instance. By the use of these, and all other means which may suggest themselves to you, as being useful in raising the debilitated system to a proper degree of vigor and to the highest possible tone, you will, in the majority of instances, quickly and effectually restore your patients to health.

There is another variety of functional disorder of the heart, consisting solely of palpitation, without any other irregularity of this organ, which we find attacking females, about or at the period of puberty, say from fourteen to sixteen, and in some instances continuing until the persons so attacked have attained the age of thirty or thirty-five. The state of the catamenia here has no influence in producing this complaint, for we meet it in persons where this secretion is regular, irregular, wholly defective, or, on the contrary, morbidly profuse, and we often meet it coexisting with leucorrhœa. It may attack males as well as females, but the latter principally, particularly such of them as have given themselves the custom of wearing tightly laced stays, and it is often met with in persons who have naturally narrow chests. In these cases the heart may be felt beating violently, and over a large extent of surface, sometimes accompanied by pain. In no case, no matter how violent the palpitation may be, is there any abnormal sound heard. The palpitation is much increased whenever the patient takes much pedestrian exercise, though (and the fact which I am about to mention is curious) if the person has been accustomed to horse exercise she can take any amount of it without feeling any inconvenience from palpitation. We often find persons who, having been delicate in early life, and subject to this

affection, on being surrounded by a numerous family in after life, tell us that they have outgrown their disorder, have become stronger than it, and that they are no longer troubled with it. A curious circumstance connected with the pulse occurs in this affection. *If the pulse (as most often happens in it) be irregular and intermittent during the prevalence of the disorder, it still continues so after the complaint has disappeared, and will continue too, irregular and intermittent, during the patient's lifetime.* If unacquainted with this fact, we might be led to infer, from the irregularity and intermission of the pulse in persons otherwise healthy-looking, the speedy accession, or even the presence of some severe disease of the heart. We frequently find this state of the pulse in delicate young females laboring under the affection of the heart in question, joined with pain of the left side, frequently extending towards the right. The existence of this pain makes them uneasy, fearing from its situation some fatal disease of the heart, and I have not unfrequently seen the *whole train of symptoms* treated by medical men as incipient pericarditis. Such an opinion is groundless, and one likely to lead to some aggravation of the functional disorder already existing. We often find this affection dependent upon spinal irritation, and the part of the column which is generally affected is the first or second, or sometimes the last of the dorsal vertebrae.

This cause of the disease is frequently overlooked both by patient and physician in their anxiety about the palpitation, until evident symptoms of spinal disease show themselves either in the usual form of curvature where the body is bent forward, or in the more severe and unmanageable form, called by the French "syphosis," when the curve is lateral and angular.

In cases where this affection depends on spinal irritation, we must immediately have recourse to the means best calculated to subdue this. For this purpose, the first step should be topical bleeding, from whatever situation the spinal irritation may occupy. This we can determine by pressure along the spinous processes of the vertebrae. After this topical bleeding by leeches or cupping, we must direct the use of counter-irritation over the seat of disease. I do not know a better remedy for this purpose than the tartar-emetic ointment rubbed in every morning and night until it produces pustulation. Along with these radical means of cure we shall derive very great advantage in controlling the distressing palpitations by the use of prussic acid or laurel water in half drachm doses three times a day. Observing to follow up this line of treatment, we shall have the gratification of finding the heart symptoms disappear, according as the primary exciting cause is removed. In the cases which do not depend upon spinal irritation, we shall find our best account in a tonic plan of treatment, supporting the strength by every means in our power, and by keeping the digestive organs in proper order.

You will take care to keep in mind the difference between these last two disorders. The former arises generally in persons at an early period of sexual life, and is attended by a suppression of the catamenia; the latter arising too, generally speaking, at an early period of sexual life, but completely independent of any connexion with the state of the catamenial secretion, which may or may not be healthy or morbidly profuse; the one attended with peculiar bruit de soufflet, the other unattended by any abnormal sound of the heart, but both coinciding in the material fact of neither proving a source of organic disease in the person affected.

[In a subsequent lecture, some other forms of functional disorder are thus considered.]

I have next to direct your attention to another functional disorder of the heart, arising in persons who have led dissolute, intemperate lives. In such persons the complaint commences with palpitations, which are excessively troublesome, and annoy the patient to such an extent as to induce a fear that organic disease of the heart may be present, and which may prove quickly fatal. The action of the heart is violently strong and tumultuous, and is often accompanied with pain shooting down the left arm as far as the elbow; these palpitations are much increased when he walks or takes exercise, if at all of a violent nature. In this state he is miserable, dreading nothing so much as instantaneous death at some period (of course) unforeseen by him; yet, with all these complaints, when you examine the heart you find its sounds natural. The tongue, in this disease, presents an appearance which you could not *a priori* conjecture; on examination, its sides, tip, and dorsum present a red and glazed appearance, indicative, in some degree, of subacute gastric inflammation. In this disease, the stomach acquires the power of secreting air, which often takes place to an

enormous extent; and if we press upon it towards its great arch, we shall find it somewhat elastic, and if we apply the stethoscope in this situation, we shall find the stomach tympanitic, and the sounds of the heart in this region become preternaturally clear and distinct. The reason of this is obvious. The stomach, being enormously distended with its gaseous secretion, irritates the heart, and throws it into irregular action, while the sounds of the organ are transmitted with preternatural distinctness through a medium so well adapted for their conveyance as the air, which is secreted by the stomach in its present disordered state. I have seen this form of functional heart disease, as I have remarked already, in persons who have led dissolute intemperate lives, addicted to excesses of every kind. I have seen more of it, however, in those persons who have returned from the civil wars in Spain than among any other class. I think that their mode of living while in Spain accounts satisfactorily for its very great prevalence among them. They were persons who, for the most part, were deprived, in a great measure, of a due supply of wholesome food; but who, in order to make up the deficiency, addicted themselves to the intemperate use of stimulants of every class, such as green tea, tobacco, and, last not least, to the use of those which the country itself supplies with such lavish profusion, wine and brandy. Here we have all the causes necessary to produce gastric inflammation, and it is this which is the root of the disease.

We shall find the appearance of the tongue of material benefit to us in pointing out the treatment to be adopted, which is nothing more than the removal of the gastric inflammation which exists in a sub-acute form. In our treatment of this affection, our first step should be the application of counter-irritation over the epigastrium, and this continued, too, for a considerable time. For this purpose, I generally prescribe the croton-oil liniment, made with a drachm of the oil to an ounce of spirit of turpentine, or compound camphor liniment. This is to be rubbed in every morning and night until pustulation is produced. Along with this topical treatment, I am in the habit of prescribing oxide of bismuth, in conjunction with bicarbonate of soda, or, better still, a combination of these two with the saccharine carbonate of iron in the following proportions:

R. Sodæ bicarbon. gr. x., Bismuth. trisnitrat., Ferri c. saccharo aa. gr. viij, pro pulvere, ter in die sumendo.

This must be persevered in for some time, until the tongue becomes improved in appearance, the stomach loses its power of gaseous secretion, and the patient no longer complains of palpitation or any other irregularity of the heart. It will be needless for me to mention that, in addition to these means of cure, you must prohibit your patient most strictly from the use of tea and all other stimulants. Let his diet be one of a nutritious, non-stimulating character, containing animal food in quantity and quality suited to his enfeebled digestive powers.

I have next to call your attention to another functional affection of the heart, which, in some papers published in the *Dublin Journal*, I have called EPILEPTIC PALPITATION, and which, strange as it may appear, is always caused by disease of the brain. It seems strange that an affection of the brain could cause palpitation of the heart, but, though strange, it is nevertheless true. You will be consulted by a young man, or by one probably in the prime of life, who will tell you that he has been attacked by palpitations for some time past, which render him uneasy, anxious, and uncomfortable, and that they come on him when he takes exercise, or is at all agitated. These palpitations frighten him very much, but when you examine the heart you find its sounds perfectly normal. On questioning him as to the first occurrence of this irregular action of the heart, he will tell you, perhaps, that some short time ago he was attacked with a fainting fit, which he says has recurred since, and that, after the first attack of syncope, the palpitations began to annoy him. This is what the older writers termed *epilepsia silens*,—silent epilepsy. About the fainting fits themselves, the patient has not the least concern; he fears only for the palpitation, and to this he directs your attention exclusively. These fainting fits, if allowed to proceed unchecked, will terminate, perhaps in a very short time, in well-marked and regular epilepsy. However, they may run on for a period of two years before the disease perfectly shows itself. Your attention will be awakened here by finding the fainting fits coming on at a period of life when they should be naturally absent, from the vigor which the constitution enjoys. You will, therefore, proceed to inquire from what cause it is that they arise. The heart, as I have said before, is perfectly normal in its sound; no disease there;

no symptoms of irritation along the vertebral column. Where, then, does the mischief spring from? The head, as I have remarked, is the cause of these alarming palpitations, and of those fits of syncope which have preceded the palpitations.

We have now to consider the means best adapted to relieve both the cause and its effects. The medicine which I have found to possess properties the most serviceable and advantageous in arresting this disease is the *digitalis purpurea*, or foxglove. I have witnessed more benefit in cases of this kind from the use of the *digitalis* (bleeding from the arm having been in every instance premised) than from any other remedy or class of remedies which I have seen tried. To produce its beneficial effects here, you must not content yourself with administering it in the small doses of the pharmacologists. The form of the drug which I have found most beneficial is the powder: it must be given in doses of *two or three grains at bed time every night*, and, in some cases, in *five grain doses*, until it exerts its peculiar effects on the constitution. You will, therefore, consider this affection of the heart only as it really is, one of secondary importance; and, in the selection of your remedial measures, you will proceed at once to strike at the root of the evil where it really exists—in the brain; and not until every trace of mischief has vanished from thence, can your patient be free from these palpitations, which are to him a source of such needless alarm. Without my having told you, your own common sense would at once have made you acquainted with the propriety of keeping your patient as free as possible from every source of mental irritation, as this has been known to prolong the disease to an extremely protracted period of time.

You will often meet, in persons of sedentary habits, an affection of the heart, consisting of violent palpitations, which, as in all these cases of functional derangement of the heart, give the patient a great deal of unnecessary alarm. There is no abnormal sound here, though the heart may be felt acting with great vigor. If we examine these cases minutely we shall find, in every one of them, evidences of venous congestion; the pulse is full and quick, the eyes are suffused, the patient feels more or less drowsy; there are sometimes a turgescence and lividity of the face, and swelling of the legs, and, occasionally, an inclination to syncope. These signs, if neglected for any period of time, will terminate in an attack of apoplexy, in all probability fatal. It is easy to conceive why, in these cases, the heart should become affected with palpitations, in consequence of the extraordinary quantity of blood thrown upon it by the sedentary habits of the patient; these palpitations being nothing more than the struggles of the over-loaded ventricle to discharge completely the quantity of fluid contained within it.

The treatment here is obvious and simple. Take blood from your patient to the extent of eight or ten ounces, so as partially to unload the ventricle; after that give a purgative, so as to unload the alimentary canal; and, in my opinion, you will have done everything requisite for your patient; in fact, you can do no more.

In concluding the subject of diseases of the heart, there may be others which I have not touched upon, but, unless my memory fails me, I have given you everything necessary for you to know on the subject. You may have thought me tedious, from the great length at which I have entered upon them, but particularly from the stress which I have laid upon functional disorders of the organ, which, probably, you may be inclined to set but little value upon; but I would beg of you most earnestly to consider the paramount necessity which exists that you should be able to distinguish accurately between these latter and structural diseases of the same organ, clearly resembling each other as some forms of both do. Recollect the serious responsibility which attaches itself to you, to be able to distinguish each variety of the diseases of such an important organ as the heart from the others; and that the effect of making a false diagnosis may be ruinous to your patient, and that while you are ordering a system of depletion, one of a totally different character may be necessary.

In every disease it will be incumbent upon you to know what other affections of the same organ may resemble the one which you are about to treat, in order that your patient may not be made a victim to a claim of pretended knowledge on your part, which you really do not possess.

[In our last volume, p. 35, we alluded to a paper by Dr. Christison on some forms of functional disease of the heart to which the young adult was especially amenable. The same important subject is also touched upon by Dr. Corrigan, whose remarks will

be found below. It is remarkable that neither the one nor the other once refer to what has, in our experience, been in very many cases the cause and explanation of the symptoms, namely, unnatural excitement of the sexual organs. The association of the two circumstances will be found on inquiry to be much more frequent than is generally suspected. Dr. Corrigan observes:]

The affection is curious, and one highly deserving your greatest attention. I have been frequently consulted on account of this affection by young gentlemen articled to merchants and attorneys, persons who spend the greater part of every day in an office, busily employed in writing. I have also often found it attacking young lads from the country, who, being suddenly taken from school and its wild pleasures, are thrust into a Dublin warehouse, there to be taxed very often, indeed, much beyond what their strength would warrant. The time at which it generally appears is uncertain, varying between the ages of thirteen and three or four and twenty. It depends, in the examples I have cited, on the sudden change wrought in all the habits of the persons attacked by it, who, instead of running about merrily and taking all the wild exercise of schoolboys, are cooped up for ten or twelve hours out of the twenty-four in a dark dingy office, breathing its impure atmosphere in place of the pure air which they were wont to inhale in their days of freedom from all restraint, their muscular system cramped and contracted for want of sufficient opportunity of ample development.

In other cases, we often find it associated with spinal irritation, or, to speak more properly, dependent upon it. Here it sets in with persons of either sex who have shot rapidly into great height, who, in fact, have outgrown their strength, and whose muscular system has not had sufficient time allowed it to develop itself adequately to support, with proper firmness, the extraordinary and quick extension of the spinal column. In these cases it very often happens that the spine is never thought to have anything to do with bringing on the affection in question, until deformity or curvature of the spine unequivocally presents itself. It commonly sets in with these persons at or about this period of very quick growth, and is in general associated with other marks of debility. The patient will tell you that palpitations come on if he run or walk at all fast, that he cannot walk any distance without feeling a sensation of weakness across the loins extending down to the muscles of the legs, which, as in other affections of the heart, are often attacked with cramps, that he bleeds from the nose on making very trifling exertions, and that on such occasions his breathing also becomes oppressed.

In other instances it makes its appearance suddenly. The patient is attacked with night-mare, from which horrible state of feeling he awakes to find his heart affected with violent palpitations; the alarm is given; a medical man is sent for; he thinks (as the symptoms seem to him to portend) that an attack of pericarditis is about to set in, bleeds the patient, and thus makes matters worse than before. After some little time, in addition to palpitations coming on when the patient takes exercise, or is affected by mental irritation, they attack him when at perfect rest, in bed for instance, or uninfluenced by any perceptible cause. Perhaps now they are accompanied by pains shooting in the direction of the heart, *which, on contracting, often conveys to the sufferer a feeling as if it had grasped upon something*, so strong is the force with which it occasionally acts. But, no matter what the loudness of sound, or the force of impulse of the heart may be, the pulse in these cases is always soft, weak, and perhaps more frequent than natural. It would appear as if the heart did not possess power to propel the blood into the extreme vessels with a degree of force sufficient to render the pulse full. In these cases, the irregularity of the heart's action depends upon an undue degree of nervous energy being transmitted to it, which stimulates it to frequent and violent contractions; and this irregular concentration of nervous energy upon the heart is owing to derangement of the general health, produced by the altered habits of the individual affected. In this disorder you will always find the bowels confined; and you will derive great benefit here from keeping the alimentary canal in a healthy state.

The only diseases with which it could be confounded are, hypertrophy of the heart and contraction of the auriculo-ventricular opening. From both it will be readily and at once distinguished by the absence of *bruit de soufflet*, which you never find in this instance, no matter how loud the sounds, or how violent the action of the heart may be. It is an affection perfectly free from danger in itself, though, as I have said before, it often is but a symptom of spinal irritation, which is completely unheeded both by



patient and physician, in their concern for the more vital organ, until plainly marked signs of this spinal affection make their appearance in the shape of curvature of the spine.

In such cases, our practice must be determined by the amount of mischief present. Here our first step must be local bleeding, either by leeches or cupping, or frequently repeated blisters; these, joined to a tonic plan of treatment, comprise all the items necessary to be adopted by us. In these cases unaccompanied by spinal irritation, when business will allow of the patient's absence for some time, the unwholesome atmosphere of the town should be changed for the more invigorating air of the country. The constitution should be kept up to the highest tone possible, only falling below that which produces inflammatory action. A full allowance of animal food, adapted in quantity and quality to the digestive power of your patient, should be given, joined to a moderate proportion of fermented liquors. Do everything in your power to increase the general muscular energy, and, according as this is brought about, the symptoms of irregular action of the heart will cease. Along with this you will prescribe, with very great advantage, a residence on the sea-coast, where the benefit derivable from rambling along the crags and cliffs will tend to invigorate both the corporeal and mental faculties. While speaking of the sea, I must not forget to remind you that sea-bathing is a most powerful auxiliary here to your means of cure, either in the magnificent bath which the hand of nature has fashioned from the waters of the wide Atlantic, or in the less noble, though occasionally more beneficial, substitute which the hand of art has provided for us in the cold or tepid shower-bath. Among the purely medicinal agents which we can employ in the disease, iron affords those from which most benefit is derivable. Of all its different preparations, the tartate is that from which experience would warrant me to expect the most beneficial results. In order to effect any advantage, its use must be persevered in steadily for some months, in doses of half a scruple three times a day. This, or some other preparation of iron, should be given for the above period, in doses adequate to produce a beneficial effect; while acid, hydrocyanic, or aqua laurocerasi, may be given with advantage in controlling the distressing palpitation of the heart. But one of the most beneficial means that we can adopt for improving our patient, consists in tranquillizing the mind, and freeing it from all dread as to the ultimately favorable termination of the case. Tell him this simple fact, that the disorder, though an unpleasant, is not at all a dangerous one; and that as to its being finally removed, there does not exist room for a shadow of doubt or fear; but never lead him to imagine that the cure of it will be, by any means, a speedy one. *The contrary is the case, for, under the most favorable circumstances, a period of two or three years, and in unfavorable cases, perhaps of ten or twelve years may run over before the cure is obtained.* You can have no a priori conception of the good which is done by quieting the patient's mind in this disease. His mind, unusually sensitive about the result of the disease under which he labors, is, in its present unquiet state, a perpetual cause of irritation, keeping up the heart's irregular action. Remove the groundless cause of this exquisite sensitiveness touching the issue of the disorder, and the diseased actions themselves will, in every case, experience a sudden alleviation, almost magically produced. To sum up the treatment of this affection, recollect that the disorder is one of debility; the way to remove which is by keeping up the muscular energy to the highest pitch of tone, by a proper allowance of animal food, suited in quality to the digestive powers of your patient.

Your purely medicinal treatment will consist in regulating the state of the alimentary canal, and assisting to raise the system to a high degree of vigor, by the administration of chalybeate tonics. Recollect that your medicinal treatment is ancillary, in a great degree, to the hygienic. Bear in mind that the disorder has been primarily induced by close confinement in an unhealthy atmosphere, and by a total and sudden change in all the previous habits and amusements of your patient. Restore him to these, aid this grand corrective means by the adoption of the regimen and medical treatment above detailed, and you will in every case have the satisfaction of finding that, according as your patient's debility of constitution gives way to your remedies, the palpitation and irregular action of the heart will cease, leaving your patient in perfect possession of renovated strength and health, the greatest blessing which you could possibly confer on him.

ART. 11.—*On the Treatment of Organic Diseases of the Heart.*

By S. SCOTT ALISON, M.D.\*

Dr. Alison remarks that the main indications of treatment in organic heart diseases are, "the removal or abatement of the source of increased resistance to the circulation—the prevention and restraining of dilatation—the maintenance of hypertrophy of the walls at that point suitable to the wants of the embarrassed circulation—the invigorating of an enfeebled organ, and in a few instances, the abatement of the nutrition and activity of the heart, when these are abnormally increased, without there being present an increased resistance to be overcome."

The first indication, says Dr. Alison, is one which should never be overlooked, but it is one confessedly difficult of accomplishment in many cases. "When pulmonary disease has been the source of the resistance, every circumstance should be avoided which is calculated to aggravate the disorder." Paroxysms of dyspnoea, fits of coughing, and exposure to cold, are particularly to be guarded against.

Adhesions of the pericardium, according to the author, although a frequent cause of embarrassed circulation, may, in the course of time, be elongated and even absorbed; as may likewise the lymph which is thrown out upon the valves. When this lymph is recent it is necessary, in the first place, to ascertain whether the action which gave rise to it is subdued. If such be the case, it will be sufficient to keep the patient quiet, and to allay the irritability of the heart by conium or digitalis, and to promote the secretions. If, however, any trace of inflammatory action remain, leeches, mercury and counter-irritation will be necessary.

The inflammatory action having been subdued, the removal of the obstructing lymph may be attempted. For this purpose the author thinks it of great importance to impart vigor to the system by the exhibition of iron. For the removal of the lymph, he prefers iodine to the mercurial preparations.

Dilatation of the heart requires an invigorating plan of treatment, consisting in wholesome food, pure air, and moderate exercise. It is in these cases that the author has found the preparations of iron of essential service.

The third great indication in the treatment of organic alteration of the heart, the maintenance of such an amount of hypertrophy as is required by the degree of obstruction to the circulation, can only be fulfilled by a plan of treatment, varied according as the hypertrophy is disposed to exceed or fall short of this point.

In the former case, the occasional application of leeches is recommended, with blisters, and the internal use of digitalis. In the latter case, when the heart appears deficient in the power necessary to meet the wants of the circulation, the treatment advised for simple dilatation will be suitable.

ART. 12.—*Treatment of Dilatation of the Heart.*

By O. B. BELLINGHAM, M.D., Physician to St. Vincent's Hospital, Dublin.

*(Dublin Medical Press, Sept. 17, 1845.)*

"As a general rule, the treatment of dilatation is directly the reverse of that of hypertrophy. In the one case, we have evidence of increased nutrition of the heart; in the other, of feeble or diminished nutrition. In the one case, we find a strong heart impelling the blood with increased force through the general arterial system; in the other, we have a feeble heart, unable to propel its contents to any distance, and probably incapable of emptying its cavities.

The objects to be held in view in the treatment of dilatation are:

- 1st. To remove the cause which occasioned the dilatation, if that be practicable.
- 2dly. Tranquillize the circulation, and to relieve the heart of the blood which overloads or oppresses it.
- 3dly. To strengthen the parietes of the heart, by which it will be enabled to expel its contents, and the further progress of the dilatation be opposed.
- 4thly. To diminish or remove the congestion of the lungs, liver, &c., and the other effects of impeded circulation, without debilitating the patient.

\* *Observations on Organic Alterations of the Heart, &c., London, 1845.*

If the dilatation be the result of valvular disease, or if it has followed adhesion of the pericardium, the effect of pericarditis, we can do little more than palliate symptoms; both these pathological conditions being irremediable. On the other hand, if the dilatation is the result of any cause which can be removed; if, for instance, it has followed prolonged muscular exertion, or violent mental emotion,—if it has succeeded to frequent attacks of bronchitis, or occurs in patients debilitated by loss of blood from any cause—if it arises in subjects weakened by previous illness, or comes on in chlorotic and anæmic individuals, much benefit may often be derived from treatment, provided the patient is young, the disease not in an advanced stage, and not complicated with attenuation or softening of the parietes of the organ.

In order to tranquillize the circulation and to relieve the heart of the blood which overloads or oppresses it, this organ must be maintained in as complete a state of repose as possible, which is to be accomplished by rest, by avoiding everything likely to excite or agitate the mind, by regulated diet, and by obviating dyspeptic symptoms, which are very common attendants upon this condition of the heart. The food should be nourishing, and but little fluid is to be permitted; at the same time, the secretions are to be maintained in a healthy condition; by these means, the amount of blood will be diminished, while its quality will not be deteriorated. Functional derangement of the stomach is common in cases of dilatation, and nothing under such circumstances is more likely to bring on palpitation and add to the distress of the patient, than a full meal or flatulent food; hence, the food should be such as is easily digested, and should be taken in small quantity at a time; and anything which occasions distension of the stomach or flatulence should be carefully avoided. The medicines calculated to relieve the dyspeptic symptoms will vary, of course, according to circumstances; sometimes antacids, at others acids are indicated; carminatives are occasionally serviceable, and the hydrocyanic acid in minute doses is sometimes given with advantage.

In order to strengthen the parietes of the heart, and to enable it to expel its contents, tonics variously combined are indicated; by improving the general health we give tone to the heart, and thus assist in diminishing or retarding the increase of the dilatation. Everything calculated to debilitate the system is to be avoided; hence, bleeding, digitalis, and antiphlogistic measures of every description are contra-indicated as a general rule. If digitalis is a dangerous remedy in some of the diseases of the heart which we have been considering, it is still more so in dilatation when at all advanced; or if the parietes of the ventricles are attenuated. Here the palpitation is an effort of nature to assist in relieving the heart of the blood which distends its cavity; if we diminish the increased action by administering digitalis, we take away the only safeguard left; the organ can no longer accommodate itself to the amount of blood which it receives, and the death of the patient may be the result.

In order to diminish or remove congestion of the lungs, liver, &c., and the other effects of impeded circulation, the same measures are indicated as have been alluded to in treating of valvular disease; but here we must be very guarded in the use of measures likely to debilitate the patient, and we must trust rather to diuretics, diaphoretics, and expectorants, than to hydragogue cathartics, or local abstraction of blood, which prove so useful in other forms of heart disease. As the extremities are habitually cold, means should be employed to equalize the temperature, and to determine to the surface, by which congestion of internal organs will be likewise relieved.

In conclusion, it must be borne in mind, that dilatation is a chronic affection, which, in its early stage, and when moderate, produces little inconvenience, and hardly requires treatment, but which, when advanced, is little under the influence of internal remedies; any improvement, consequently, must be slow and gradual, and in many cases we can do little more than palliate symptoms; consequently, the success of our treatment will depend in a great measure upon the patient observing carefully the rules laid down for him; if he lives intemperately, or is obliged to labor for his bread, the disease will run a more rapid course. But "if (as Mr. Burns observes) the patient keeps quiet, submits to a regular, light, and digestible diet, and employs occasionally remedies to relieve the dyspeptic symptoms, it will afford him comfort to know that he may ward off the fatal issue for a considerable length of time, and may even enjoy tolerable health."

ART. 13.—*General Principles of Treatment in Aneurisms of the Aorta.*

By NORMAN CHEEVERS, M.D.

*(Medical Gazette, Aug. 29, 1845.)*

The observations, of which we shall here give an abstract, form the concluding part of an excellent essay upon "general and aneurismal dilatations of the aorta," by a gentleman who is well known for the assiduity with which he has investigated the pathological anatomy of the heart and large vessels. The first part of the essay is occupied with the causes and forms of the various aneurismal dilatations to which the thoracic portion of the aorta is subject, in the course of which several opinions in general circulation are clearly shown to be erroneous, and among these, that which attributes the commencement of an aneurismal dilatation to that part of the artery in which atheromatous or more solid deposit is either most abundant and the furthest advanced. The author then considers the treatment of aneurism after the following manner:

The chief indications to be fulfilled in conducting a rational plan of medical treatment in cases of aneurisms of the aorta are:

"To encourage as much as possible the depositing of thin layers of plastic coagula within the aneurismal sacs.

"To render the circulation through the arteries, capillary system in general, and the principal venous trunks, as free as possible.

"To diminish the volume of the circulating fluids in such a manner as to reduce the proportion of thin watery constituents, without diminishing the fibrin, or producing debility in the system; and lastly, to maintain the muscular powers of the heart."

In speaking of the system of Valsalva, the author is inclined to admit the justice of the principles of that system as carried out by its author. He, however, considers that in the hands of incautious practitioners it has been the cause of a great amount of evil, "becoming in their hands a system of injudicious depletion and starvation, instead of being, as it was originally designed to be, a means of tranquillizing the circulation, reducing the fluids, but at the same time of maintaining the power of the vascular organs."

The natural process by which the cure of an aneurism is effected, is, by procuring obliteration of the sac by layers of firm coagula.\* In aneurisms of the extremities this alone appears to be sufficient, but in aneurisms of the aorta, a far more delicate process requires to be effected, as here the sudden formation of loose coagula will always be liable to occasion rupture of the walls of the sac. "It is necessary in aneurism of this artery," says the author, "to cause the obliteration of the sac, by layers of coagulum firm enough to resist infiltration of blood, and which shall present internally a smooth surface over which the blood may readily glide."

Another object in the treatment, much insisted upon by the author, is that of removing visceral congestions, and avoiding all unnecessary irritation and excited action in the organs, at the same time endeavoring to keep up a natural discharge of their functions. The two organs which it is especially necessary thus to attend to, are the liver and kidneys. Many cases of disease of the heart and great vessels would be readily enough kept in abeyance, were they not aggravated by consentaneous inactivity or irritation of these two great emunctories.

In aneurism, as in every other form of organic disease of the vascular centres, the prolongation of life generally, in a very great measure, depends upon the maintenance of that degree of rest which, while it prevents the capillary obstruction which is attendant upon muscular action, does not deprive the patient of the benefits of the air and gentle exercise.

The reduction of the volume of the circulating fluids has always been considered a main point in the treatment of organic diseases of the heart and its appendages, but "unfortunately," observes the author, "depletion has been too often the course adopted, to effect this purpose." The desired effect, however, may be far more successfully produced by gradually diminishing the fluid ingesta, than by any system of active evacuation; and the fact, that the palpitation, lividity of the surface, &c., mainly depend upon the admission of an undue quantity of material into the blood, becomes itself a

\* In reference to this point see Abstract, vol. 1., p. 137.

suggestive that in such cases, all unnecessary articles of diet, solid as well as fluid, should be dispensed with.

The author animadvertes with severity upon the practice of exhibiting digitalis, and other medicines which have a depressing effect upon the power of the heart. The great error, he observes, is in regarding the palpitation, for which these medicines are generally given, as though it were itself the disease, and not what it really is, the sole means by which an overloaded and obstructed heart is enabled to propel its contents. The rational mode of treatment is clearly, to remove the causes of the obstruction from which the heart suffers, where these are not of a permanent nature; or if this be not possible, to diminish the load of fluid which embarrasses the heart when the palpitation being no longer requisite, will cease of itself. It is certainly unwise to administer a medicine which its advocates justly term a "direct sedative of the heart" in a class of diseases, where all the worst symptoms arise from the difficulty that organ experiences in propelling its contents.

Whenever, as frequently happens, the patient appears to be gradually sinking from the violence of the paroxysms which attend the failure of the heart's powers, restoratives, or even powerful stimulants, become necessary.

#### ART. 14.—On Anæmic Murmurs.

By H. M. HUGHES, M.D., Assistant Physician to Guy's Hospital.\*

In certain states of the system, or, it may be, with certain conditions of the circulating fluid, as in chlorosis, or in anæmia from hemorrhage, or from other causes, murmurs frequently arise from the passage of the blood, independently of absolute disease of the heart or great vessels. These are termed *anæmic murmurs*, or "*chlorotic bruits*."

They are ordinarily of the softer kind, and resemble the blowing of a pair of bellows ("*bruit de soufflet*"), but they are sometimes quite harsh, and resemble the rougher morbid sounds, as that of filing or sawing (*bruit de râpe* and *bruit de scie*").

They are very generally supposed to be confined to the aortic openings. This is certainly a mistake. They are most assuredly very frequently connected with the pulmonary artery, in which murmurs, quite independent of any disease of the vessel, or of its valves, are far from uncommon.

Murmurs often arise from some body pressing upon this vessel; as a solid mass, the result of pleurisy, of pneumonia, or of phthisis, or enlarged bronchial glands, abscesses of the anterior mediastinum, &c., &c. The murmurs frequently also coexist with chlorosis, or with other forms of anæmia. Are these latter murmurs, then, whether in the pulmonary artery or in any other part of the circulating system, to be distinguished with tolerable certainty from morbid sounds, the result of organic obstruction within or without the heart or large vessels?

Generally speaking, they may, I believe, be distinguished from each other; but they certainly cannot always be so; and never with absolute certainty by the mere character of the murmur alone. There are, I feel assured, some examples of these anæmic murmurs, which can be proved to be simply functional, and not to arise from organic disease of the heart or its vessels, or from pressure upon them, only by the results of treatment.

Let, then, the student be careful not to assert too confidently that a patient, on the one hand, has organic disease of the heart, or great vessels, merely because he has a harsh murmur over the aorta, an occasionally irregular rhythm, and a vibrating pulse, which usually coexist with an anæmic condition of the body, or he may cause unnecessary alarm and anxiety; nor let him, upon the other hand, too hastily determine, that, because a murmur is soft, and his patient is an hysterical girl, with a pale face, and is subject to leucorrhœa and to amenorrhœa, that she has no organic disease; or some day, to his great surprise, grief, and mortification, and possibly also to his disgrace, he may find she has died suddenly with diseased heart.

Anæmic murmurs, however, it may be stated, are very local and are generally pretty much confined to the situation of the sigmoid valves, either aortic or pulmonary, or both; they do not follow the course of the large vessels so fully, or so frequently, as

\* Clinical Introduction to the Practice of Auscultation, &c., p. 281.

do the murmurs arising from disease of the valves, or of the arteries : they occur only during the systole of the ventricles ; and as they cannot arise from regurgitation through the mitral valve, they are not heard very distinctly below the left nipple ; they are always, so far as I know, accompanied with a smart smacking impulse ; they generally disappear for a time while the individual is quiet, mentally as well as bodily, if by that quiet the heart assume a natural impulse ; and they are always diminished, and generally disappear entirely, under suitable treatment.

The origin of the anæmic murmurs has latterly been very generally attributed to a watery condition, or a diminution of ordinary viscosity, of the blood ; in consequence of which it is believed that the particles of the fluid move more easily over each other, are therefore more freely agitated, and thus give rise to the vibrations which produce the murmur. This may have some, and perhaps an important, influence in producing them.

But there are other circumstances which also appear to play an important part in their causation. The principal of these is the remarkably quick and sudden contraction of the ventricles ; in consequence of which the fluid contents of the cavities are propelled through the comparatively small area of the mouths of the large arteries in a shorter time than during the leisurely contractions of health, or the frequent, but not sudden, contractions existing in some other forms of disease. Though, therefore, no actual contraction exists, an obstruction is practically produced by the increased velocity with which the blood is propelled through the aortic and pulmonary openings. The increased agitation in the fluid thence arising, it is at least probable, has a principal part in the production of anæmic murmurs.

If the heart beat quietly, and the impulse be natural, however decided the pallor of the face, and whatever the watery condition of the blood, no murmur, I believe, exists, when no mechanical obstruction is present.

It is also possible that the *quantity* of the circulating fluid is decreased in such cases, in addition to its *quality* being altered, and that while, by the elasticity of their coats, the arteries are capable of accommodating themselves to the diminished quantity of the fluid, the cavities of the ventricles retain their normal capacity, and that on this account an absolute, as well as a comparative obstruction, may exist to the transit of the blood.

Concurrently with these anæmic murmurs at the origin of the large arteries, there is often heard, upon the application of the stethoscope to the side of the neck, a curious sort of humming noise, which ceases when firm pressure is exerted upon the jugular vein at a point above that on which the end of the stethoscope is placed. It is continuous, not intermittent like the arterial murmur, and is, therefore, sometimes called the "continuous humming," as well as the "venous murmur,"—"bruit de diable," &c.

It most probably depends upon partial obstruction to the quickened flow of blood through the veins. Strong pressure causes it to cease ; but without pressure, *directly or indirectly applied*, it is, I believe, never heard. Like the anæmic murmur of the arteries, it is supposed to be associated with a watery condition of the blood, and it is, we are told, a frequent, if not a constant, attendant upon that state of the system with which such a watery condition of the blood is a concomitant.

This statement is not made from my own observation, but if true, the venous hum may perhaps be considered a useful assistant indication of the anæmic state.

But great obstruction to the blood may, as has been previously hinted, exist ; extensive disease may be present in the valves of the heart, or in the large arteries, and yet no murmur may be heard. This arises from circumstances which may be, as they have already been partially, illustrated by the stream, in which a certain rapidity of the current is necessary to produce such an agitation of the water as will give rise to sound. Though the bottom of a rivulet be very uneven, and its banks exceedingly irregular, yet if the current be not tolerably strong, little or no ripple will be produced, and no sound will be generated. It is just so with the blood ; rapidity of the current of the blood, as well as obstruction thereto, is necessary to produce such an agitation among the particles of the fluid as will give rise to sound.

Hence it often happens that a heart with extensive disease of the valves may be without murmur while the patient is quiet, and the circulation is slow ; though immediately the circulation is accelerated, either by physical exertion or by mental emotion, a murmur becomes distinct. Hence, also, it happens, that when the cavities of the heart become greatly distended, in consequence either of the magnitude of the obstruc-

tion, or of defective nervous power, the ventricles are frequently incapable of acting upon and propelling their contents with sufficient force to produce a murmur. The channel is irregular enough, but the rapidity of the current, and of the resulting vibrations, is not equal to the generation of sound. Hence, likewise, it arises, that when fluid is present to a large amount in the pericardium, the heart may be so oppressed with the accumulation upon its exterior, that, though great obstruction exist within, no murmur is produced. Thus it will be often observed that when the obstruction is greatest, the murmur, if even it be heard at all, is very feeble; and that when the obstruction is small, the murmur is very loud; thus also, in persons who, for weeks and months, and even years, have presented notably morbid cardiac sounds, these sounds, if the individuals are not carried off suddenly, very frequently, or perhaps even generally, cease altogether some days before death.

The cause of this, as before stated, is either that the heart does not contract with sufficient power, or if it act forcibly, that it cannot act upon, and propel through the contracted orifices, the large quantity of blood which distends its cavities with a rapidity sufficient to give rise to sound.

Let, then, the student ever bear in mind the truth, that mere obstruction is not in itself sufficient, but that a certain force or rapidity of the circulation must be necessarily combined with that obstruction, to give rise to morbid endocardial sounds. Murmurs may exist without any obstruction of an organic kind; but without a certain degree of force in the circulating current they cannot exist.

ART. 15.—*Statistics of the frequency of Cardiac and Pulmonary Complication in Acute Rheumatism.* By P. N. LATHAM,\* M.D., Fellow of the Royal College of Physicians, &c.

[The following remarks embody the experience of Dr. Latham, as related by him in the recently published and most valuable work, before alluded to. He observes that between the years 1836 and 1840, both inclusive, he met with 136 cases of acute rheumatism, of which 75 were males, and 61 were females.]

Of the 75 males, the heart was affected in 47, unaffected in 28. Of the 47 cases, the disease was confined to the endocardium in 30, to the pericardium in 3, and affected both simultaneously in 7. In 7 others, although the heart was undoubtedly affected, the exact seat of the disease was uncertain.

Of the whole number of males in whom the heart was thus affected, 3 died, and in these 3 both pericardium and endocardium were inflamed.

Of the 61 females, the heart was affected in 43, and not so in 18. Of the 43 cases, the seat of the disease was the endocardium alone in 33; the pericardium alone in 4; and both membranes in 4; the exact seat of the disease was doubtful in 2. None of these females died.

The account therefore of both males and females will stand thus:

	No. of Cases	136
Heart exempt . . . . .		46
Heart affected . . . . .		90
Seat of the disease in the heart:		
Endocardium alone in . . . . .		63
Pericardium alone in . . . . .		7
Endocardium and pericardium in . . . . .		11
Doubtful in . . . . .		9
Deaths . . . . .		3

Of the 63 patients who suffered from endocarditis, and who became convalescent, auscultation still revealed the fact, that after the inflammation had ceased, the membrane recovered complete integrity only in 17, and that it remained permanently uncured in 46. Of the 30 males, the endocardial murmur ceased entirely only in 8, while it remained as long as they continued under observation in 22. Of the 36 females, it ceased entirely only in 9; and remained in 24.

\* Lectures on Subjects connected with Clinical Medicine, vol. I, p. 144.

In the 136 cases which form the basis of this inquiry, the heart was inflamed in 2-3ds of the whole; the lungs only in about 1 in 5. In these cases 24 in number, the pulmonary affection was severe; they consisted of bronchitis 8 cases; of pneumonia 18; of both combined 9 cases; of pleurisy 2. Of these 24 cases, 2 proved fatal.

Of the 46 cases of acute rheumatism, in which there was no heart complication, the lungs were likewise free in 6, or in 1 in 9 cases. On the other hand, in the 90 cases in which the heart was affected, pulmonary disease also occurred in 1 in 5.

#### SECTION IV. DISEASES OF THE CHYLOPOIETIC SYSTEM.

##### ART. 16.—*On Perforating Ulcer of the Stomach.*

By JONATHAN OSBORNE, M.D., Queen's Professor of Materia Medica, &c.

(*Dublin Journal of Medical Science*, July, 1845.)

THIS is a form of disease, observes Dr. Osborne, which is peculiarly insidious, and which, from the slightness of its symptoms, is, as a point of pathology, involved in considerable obscurity. The form of the ulcer is unlike any other, being as it were punched out in a circular form, with a smooth and perpendicular edge. The most usual situation of the ulcer is always at or near the lesser curvature; and its existence is often not suspected, until the rupture of the peritoneal coat, and the escape of the contents of the stomach give rise to fatal symptoms. Dr. Osborne appears to hesitate whether he should consider the disease as idiopathic, and distinct from all others, or whether it should be placed among the affections of the gastric glands, or of the mucous membrane. The earlier symptoms are not often noticed, but from the few cases in which his attention has been directed to them, the author thinks that they are indicative only of acidity of the stomach.

The statistics of the disease, as stated by Rokitsansky, are as follows: Of 79 cases, the ulcer was situated on the posterior wall in 20; on the small curvature in 15; on the anterior wall in 5; a short distance from the pylorus in 16; in the duodenum in 6; in different parts of the stomach at the same time in 16. Their size varied from that of a sou to that of a five franc-piece. In twelve cases there were two; in 4 there were three; and in 1 there were five ulcers existing at the same time.

The production of these ulcers is involved in obscurity; but according to the views of the author, they depend in the first instance upon the irritation of a group of the glands which secrete the gastric juice.

The disease is distinguished from the less formidable affections of the stomach, by the insignificance of the symptoms of acidity and pain, compared with the dreadful process of ulceration, which is gradually going on. In none of the cases which fell under the author's observation, was there vomiting either of blood or sanious matter, such as is usual in other forms of gastric ulceration. The main symptoms appear to be slight acidity of the stomach, a soreness felt in one spot in the epigastric region, and finally the fatal rupture and effusion of the contents of the stomach which usually terminates life in about twelve hours.

The disease is frequently to be traced to grief or anxiety. Professor Rokitsansky states that out of 79 cases, 46 occurred in females. The same preponderance has occurred in the author's experience. Hence it would appear that there is some peculiarity connected with the sex, which renders them liable to the disease.

The author here introduces his notions respecting the mode of ascertaining not only the existence of these and other ulcers of the stomach, but also of the part of the viscus in which they are situated. This, he remarks, depends upon the complete insensibility of the stomach to the sense of touch, which causes it not only when healthy, but even when irritated or inflamed, to make those states known by the symptoms produced in remote parts, rather than by pain in the organ itself. When, however, ulceration takes place, a new surface is formed, possessing the same sensibility to touch as other ulcers, and susceptible of a feeling of smarting or burning whenever it is



immersed in the acid fluids of the stomach. The diagnosis of the situation of the ulcer then depends upon the effect which the position of the patient has either in producing or alleviating the pain. When he lies so as to bring the fluids of the stomach in contact with the ulcer, the pain is perceived, but when he lies so as to keep the denuded part above the level of the gastric fluid, he enjoys comparative ease; and in general there is a considerable remission of pain as long as the patient remains in the erect posture, arising from the fact that in the majority of cases, the ulcer is seated upon the lesser curvature. [Four cases are here appended, which appear to justify the conclusion of the author, in respect to this mode of forming a diagnosis.]

Professor Rokitsansky states that there is evidence of the occasional cure of these ulcerations, in the fact that circular cicatrices are frequently seen on the internal surface of the stomach, in persons who have been known to suffer from the foregoing symptoms. The treatment recommended by the author, consists in the cautious use of metallic astringents, and in small doses of opium, which he prefers to any other form of narcotic. The lime moxa is also highly praised by him.

The occurrence of perforation is thus described. "When this dreadful event has taken place, it is known by the following symptoms: a sudden attack of violent pain, shooting through the epigastrium and abdomen; the efforts of vomiting are unaccompanied by the rejection of the contents of the stomach by the mouth; rapidity of the pulse, soon passing into extreme weakness and irregularity; tympanitic distension and hardness of the abdomen; and a constant desire to pass urine, continuing although the bladder has been repeatedly emptied. The average duration of life under these circumstances is about twelve hours; but the cold perspiration and collapse of the features announcing the approach of death, generally commence about the eighth hour."

"In some instances life is protracted, and the symptoms may be even mitigated, when the contents of the stomach happen to be small in quantity; or when, in consequence of adhesions previously formed in the parts in the vicinity of the stomach, the effusion has been prevented from extending through any extent of the peritoneal cavity. The constant and urgent desire to evacuate the bladder, is, according to my observations, a symptom always present, except under the circumstances just mentioned, and from its absence in these cases it would appear to be caused by the sudden presence of the effused fluids of the stomach around the bladder, communicating to that organ the peculiar sensation belonging to the presence of fluid within its cavity."

When the effusion has taken place, all hope of recovery by the aid of medicine is precluded. We must in particular avoid exhibiting stimulating medicines by the mouth, as they, by passing through the aperture in the stomach, produce a dreadful increase of torment. At this crisis, little remains for us to do, but to administer opiates, to apply fomentations, and when the heart's action begins to fail, to endeavor to move its energies, by wine and other cordials, administered in the form of enema."

[The following statistical account of 51 cases of perforation of the stomach are furnished by Mr. Crisp. This gentleman considers uterine derangement to be the main predisposing cause of the disease:]

Cases 51	Females 39.	Males 12.
The ages of the females were as follows:		
Between 15 and 20 . . . . .		21
" 20 " 25 . . . . .		10
" 25 " 30 . . . . .		5
" 30 " 40 . . . . .		1
" 40 " 50 . . . . .		1
" 50 " 60 . . . . .		1

*Previous state of health.*—The greater number suffered from dyspeptic symptoms prior to the attack; the most frequent of which were occasional pain in the region of the stomach and left side, pyrosis, and flatulence. Vomiting was not a constant symptom, although it occurred in many instances. The menses were irregular in thirteen; in twenty-five this function is not mentioned; in one only the patient menstruated a month before the attack.

Most (if not all) of the females were *unmarried*.

Duration of the attack from twelve to thirty hours. In one instance (Dr. Elliotson's patient), life was prolonged for seventy hours.

*Morbid appearances.*—The apertures in the majority of the cases were situated in the smaller curvature, more frequently midway between the pyloric and cardiac openings, but in many instances near the cardia. In one case only, was the perforation close to the pylorus, and in this instance it will be seen that a fibrous tubercular excrescence existed externally. In nine examples, as in Mr. Cox's case, two ulcers were present, opposite to each other, so that when the stomach was in a state of collapse, the diseased parts were in contact.

*Males.*—Of these only one was under twenty years of age. The aperture in nine was close to the pylorus; in three midway between the openings. Five of the examples were of a doubtful character, the parts around the opening being hard and callous.

*Prov. Med. and Surg. Journ.*, Sept. 17, 1845.

#### ART. 17.—On Hydatid Tumors of the Liver.

By GEORGE BUDD, M.D., F.R.S., Professor of Medicine in King's College, London.

[The observations which we shall present to our readers in a slightly abridged form, constitute a portion of the fourth chapter of Dr. Budd's recent admirable work on "The Diseases of the Liver." The commencement of the section which offers a most complete description of the natural history, development, and final changes which take place in the hepatic acephalocyst, we shall pass over, and proceed to analyze those of the author's remarks which more directly bear upon practice. The causes of hydatid formations are thus stated:]

"From the cases which have been placed upon record, hydatid tumors appear to be of nearly equal frequency in the two sexes. They are most common from the age of 20 to that of 40, but may occur at any age from 6 to 50 years. I have found no instance in which such a tumor occurred under the age of 5 or 6, or above that of 52. Cruveilhier has related the case of a man who died at the age of 67, with an hydatid tumor of the liver, which appeared fifteen years before, that is when he was 52. In all other cases which he collected, twenty in number, the tumor seems to have been formed under the age of 40.

Of the published cases of hydatids of the liver, there is a considerable portion in which the tumor seems to have formed soon after a blow on the side, and as was supposed, in consequence of it. Among the cases collected by Cruveilhier, there are four in which the tumor was supposed to originate in this way; and in the paper by Mr. Caesar Hawkins in the eighteenth volume of the *Medico-Chirurgical Transactions*, there are several others in which the tumor seemed to be the effect of some injury to the side.

In some instances in which the disease was ascribed to a blow, the tumor contained a solitary acephalocyst; in others, many. In some there was only a single tumor, in others more than one tumor in the liver, or a tumor in the spleen as well. This circumstance throws discredit on the imputed cause, or is an additional argument in favor of the doctrine, that where there are many hydatid tumors in the same person, one of those tumors is the parent of the rest."

[Dr. Budd thinks that additional causes may be found in certain endemic influences, since in sheep, a class of animals very subject to the disease, a particular pasture will always give rise to them. He has observed that they are rare in India, and in sailors. He alludes also to the experiments of Klencke, mentioned in our *Report on General Pathology*, which seem to establish the fact of their inoculability. The symptoms of hydatids of the liver are thus described:]

"When the tumor grows rapidly, or from any cause inflammation is set up within it, the patient has severe pain in the side, and some degree of fever. Under other circumstances, that is when the tumor grows slowly, and is not the seat of inflammation, it is unattended by pain, or gives rise to a sensation of weight rather than of pain; and before it has attained such a size as to interfere mechanically with the functions of the liver, it excites no constitutional disturbance, and is not incompatible with a good state of general health. Not unfrequently indeed, the presence of a tumor of this kind is not suspected during life.

"As the tumor grows it pushes up the walls of the belly, and can in most cases be readily seen and felt. Even then if no inflammation be set up within or around it, the

tumor is not painful or tender, and causes little other disturbance than that which results from its bulk. It may continue for a great number of years, indeed for the allotted term of human life, without causing other mischief, but the person is in constant risk of new sufferings, from the natural tendency of the tumor to discharge its contents by rupture. The tumor may ulcerate through the walls of the belly, and its contents be discharged outwardly, or it may open into some part of the intestinal canal. In either case the sac may close up, and the patient recover." This termination is the more to be expected in proportion to the recency of the formation of an old tumor being liable to suppurative inflammation. In certain cases it may burst into the cavity of the peritoneum and destroy life in a few hours. There is also the risk of the formation of secondary hydatids in the lungs or other organs.

"The diagnosis of an hydatid tumor when it has attained such a size as to be readily seen and felt, seldom presents much difficulty. The presence of a large globular tumor connected with the liver, which has grown slowly, without pain, jaundice or ascites, and without fever or general disturbance, is almost evidence enough that the tumor is hydatid. It can hardly be mistaken for an abscess, which never forms and attains a large size without a high degree of fever, or for malignant disease of the liver, which gives rise not to a large globular, indolent tumor, but to an unevenness on the surface of the liver from numerous small tumors projecting above it, and which is associated with general tokens of the cancerous cachexy.

"We are much more likely to take a distended gall-bladder, which is likewise smooth and globular, and is not tender, for an hydatid tumor,—but great distension of the gall-bladder almost always results from some mechanical impediment to the flow of bile along the common duct, and is attended with deep jaundice.

"But the disease most difficult to distinguish from an hydatid tumor of the liver, is an aneurism of the abdominal aorta forming a tumor behind the liver. This, like an hydatid tumor, may be globular, and may exist without much tenderness, without jaundice or ascites, without much disturbance of digestion, and without much difficulty of breathing. The circumstances which seem to mark the tumor as aneurismal, are, the sudden occurrence of the first symptoms of the malady, with a feeling as of cramp across the epigastrium, not attended by vomiting and purging, and not followed by jaundice; the existence of distinct pulsation in the tumor, and a bellows-sound heard over the last dorsal or upper lumbar vertebræ; but more than all, a great pain which the patient suffers in the situation of the tumor, and in various other parts of the body, especially the shoulders and legs. These symptoms are absent in cases where an hydatid sac forms a similar tumor, so that by attention, the two diseases may generally be distinguished. Cases are, however, now and then met with in which, from some unusual circumstances, it may be difficult or even impossible to pronounce that the tumor is hydatid. . . . If an hydatid tumor of the liver which has been long indolent, should become painful and tender, and the patient should have shivering, with fever and constitutional disturbance, it may be inferred that suppuration is set up within the sac."

[The cure of hydatid tumor of the liver may, according to Dr. Budd, take place in one of two ways, either by the secretion within the sac of a matter resembling putty, or by the discharge of the tumor through the abdominal parietes, the lungs, or the intestinal canal. Both of these modes of termination are followed by obliteration of the sacs in most instances, but in the latter cases, the admission of air occasionally gives rise to suppuration of the sac. The great danger in all cases of hydatid tumor, is the risk of their bursting into the peritoneum, the result of distension from increase in the quantity of the contents of the sac. Upon the possibility of avoiding this catastrophe, the author observes:]

"This danger would be obviated, if by any means we could so modify the fluid secreted by the inner surface of the sac as to destroy the acéphalocysts without causing suppuration. It is not difficult to conceive that there may be medicines which have the power to effect this. . . . There are two medicines, iodide of potassium and common salt, that have been supposed to have the power of arresting the growth of hydatid tumors. Iodide of potassium is much confided in by many physicians in this country, and has been for some years very generally prescribed in this disease, but I have not been able to find any decisive evidence in its favor. Mr. Hawkins states that a case occurred in St. George's Hospital, in which the tumor was much lessened, and ascites and other symptoms were got rid of for a time, by the use of iodine, but the disease

was ultimately fatal. I quite think, however, that our experience of this medicine encourages a further trial of it in these cases.

"The virtues of common salt in the treatment of hydatid tumors in the liver are much relied on by some continental physicians, who recommend a strong solution of it to be applied as a poultice or lotion over the tumor."

[As medicinal means frequently fail in the treatment of these cases, the author next considers the propriety of opening them. Two cases are given in which puncture was successfully performed by Dr. B. Brodie, but these are considered as too much above the average in success to warrant the recommending of the operation as a general proceeding.]

M. Recamier prefers caustic to the knife, as by the preliminary inflammation excited by the former, the peritoneum in front of the tumor is united with it by inflammation, and thus the risk of communication with the general cavity of the abdomen is diminished. Mr. Caesar Hawkins advises the opening of the tumor only when it is large and causes great irritation, and recommends the trochar and canula. He thinks the fear of extravasation into the peritoneum much exaggerated. The author is inclined to give the preference to the grooved needle, as recommended by Dr. Prichard of Bristol.]

ART. 18.—*Case of Ileus; Portion of Intestine expelled by Stool. Recovery.*  
By Dr. NAGEL, of Lemberg.

K. J., a servant, had always enjoyed good health till within the last few years, when he became subject to frequent attacks of colic. On the evening of the 12th of Feb., 1843, he was seized with violent pain at the lower part of the abdomen, accompanied with shivering, and frequent vomiting and purging. On admission into the hospital, on the morning of the 13th, he was in the following state: head hot and painful; tongue foul; thirst; abdomen swollen, and tender to the touch; skin dry; pulse full, hard and frequent; vomiting, with watery stools, tinged with blood. (Antiphlogistic treatment.)

The symptoms continued much the same till the 16th, when they diminished in intensity, and the stools were no longer tinged with blood. On the 19th, there was violent tenesmus, accompanied on the 23d with prolapse of a portion of intestine, which, however, was reduced without causing pain.

On the 26th, the patient free from fever, and altogether in a satisfactory state; passed by stool a portion of intestine, 20 inches long, and at some points 2 inches broad; it consisted of a portion of the ileum, the cæcum, appendix vermiformis, the whole of the ascending arc and a portion of the transverse colon. The mucous membrane was everted, of a brownish color, striated with black, especially at the cæcum; it was soft and easily removed; the peritoneal coat was likewise of a brown color, and corroded, leaving bare the muscular coat, which was also destroyed at some points; for some days after, there was slight pain at the lower part of the abdomen; but on the 23d of March, the patient left the hospital perfectly cured.

*Gazette Medicale, and Edin. Monthly Journal, Aug., 1845.*

ART. 19.—*On the Acetate of Lead in Alvine Discharges.* Dr. Corrigan thus expresses himself in reference to the powers of this medicine in diarrhœas occurring towards the close of fever:

"Since I received a communication from Dr. Bardaley, recommending the trial of acetate of lead in that form of diarrhœa which comes on towards the termination of fever, and generally ends in ulceration of the Peyerian glands, I have made several clinical experiments with the view of ascertaining the powers of this remedy. I have found it exceedingly useful in controlling superabundant secretion in numerous instances. I have experienced the best effects from its employment, not only in the diarrhœa which accompanies ulceration of the mucous glands, but also in that species of diarrhœa which occurs at an earlier period of fever, and by means of which nature attempts the relief of intestinal congestion. Of its great value in the treatment of cholera I have already spoken; indeed, I do not know of any remedy by which inordinate fluxes from the bowels, whatever may be their nature, are so efficiently treated. The same remarks will apply to super-secretion from the lungs. In cases of phthisis

attended with such copious secretion as to threaten suffocation, it is very beneficial: its effects are equally remarkable in chronic bronchitis with copious expectoration, and you are all aware of the great efficacy it possesses in checking hæmoptysis. I have been in the habit of prescribing it in combination with laudanum and wine vinegar; the latter I have added on the recommendation of Dr. Thompson, of London."

*Medical Times*, June 14, 1845.

[Canstatt relies greatly upon the nitrate of silver in obstinate forms of diarrhœa; having succeeded with it in several cases after the failure of other remedies. He prefers the subjoined formulary:

R. Argent. nitr. chrystall. gr.  $\frac{1}{4}$  ad  $\frac{1}{2}$ . solve in aquæ distill.  $\mathfrak{z}$  ij: adde gum. mimos.  $\mathfrak{z}$  ij, sacchari albi  $\mathfrak{z}$  ij. Misce. Dose: A teaspoonful or two every second hour.]

*Die Specielle Pathologie, &c., in Dublin Journal*, Nov., 1845.

ART. 20.—*Treatment of excessive Tympanitic Distension.*—The accumulation of gas within the bowels has occasionally been known to be so great as to lead to laceration: the remedy which Schönlein has found to be most effectual for the relief of this symptom, is a clyster of cold water; the cold contracts the bowels, and diminishes the expansion of the gas, while the water at the same time absorbs a portion of it. This injection may be frequently repeated.

*Review of Schönlein's Lectures, Medico-Chirurgical Review*, Oct., 1845.

ART. 21.—*Treatment of Asiatic Cholera.* Dr. McGregor, in the *Quarterly Medical and Surgical Journal for the North-western Provinces*, speaks highly of croton oil in this fatal disease, assuring us that it has seldom failed in curing the disease, when given sufficiently early, and combined with opium. He says, "if no blood can be obtained, I give the following draught immediately:

R. Ol. Crotonis	.	.	.	.	gts. v.
Tinct. Hyoscyami	.	.	.	.	$\mathfrak{z}$ j.
Opii	.	.	.	.	gts. v. M. ft. haust.

If the spasms remain, and free vomiting does not succeed, the following pills are administered until it arises, when the skin becomes warm, and other symptoms improve:

R. Opii	.	.	.	.	grs. iij.
Ol. Crotonis	.	.	.	.	gtts. v. M. ft. pil.

Nine grains of opium and fifteen drops of oil in repeated doses, will produce these effects, but in one case Dr. McGregor gave eighteen grains of opium and twenty-seven drops of oil before the disease yielded. To prevent a relapse, he recommends quinine.

[Dr. Jephson, who writes in the same journal, treats cholera differently; he tells us, that after trying without benefit, stimulants, calomel, opium, &c., "he determined to pursue the same treatment as is usually followed in ague," being convinced that the two diseases were strictly analogous in their symptoms and origin. Acting upon this impression, he exhibited emetics and neutral salts, "modified and combined with opium and stimulants in some of the stages." His usual formula was a mixture consisting of an ounce of Epsom salts, two grains of tartar emetic, and eight ounces of water; the dose one ounce every half hour. After the third or fourth dose, the vomiting and purging often ceased. Dr. Anderson relates two cases in which decided benefit was obtained from the use of saline enemata.]

*Med. and Chir. Review*, Oct., 1845.

ART. 22.—*On the Nature of the Green Evacuations of Children.*

By GOLDING BIRD, A.M., M.D., Fell. of the Royal Coll. of Physicians, &c.

(*Medical Gazette*, Sept. 7, 1845.)

[The green evacuations of children, like many other subjects of common occurrence, have attracted but little attention, further than being considered as an evidence of the irritant effects of mercury upon the liver and alimentary canal when that medicine has been exhibited. The profession has been satisfied in respect of their nature, to look upon them as bilious, without possessing data derived from chemical analysis upon which such an opinion could be founded. Dr. Bird has, however, recently es-

tablished it as a fact that this explanation is erroneous, as he has failed to detect more than the ordinary quantity of bile in very marked specimens of the "spinach" colored stools. He is, as will be seen, disposed to regard the color as depending upon the presence of modified blood. He has recently examined a specimen sent to him by Dr. Forbes, with the following results:]

"It was passed by a hydrocephalic infant whilst under the influence of mercury, and presented the following characters. It was a dirty-green turbid fluid, which, by repose in a glass vessel, separated into three very distinct portions—1. A supernatant fluid of oil-like consistence, presenting a brilliant emerald-green color. 2. A dense stratum of mucus, coagulated albumen, and epithelial debris, mixed with red particles of blood. 3. A deposit, occupying the lower part of the vessel, of large crystals of triple phosphate of magnesia and ammonia, in fine prisms of an apple-green color.

"The supernatant emerald-green fluid was decanted for examination.

"A. It was faintly alkaline, possessed a broth-like color, and a density of 10·20.

"B. The addition of a few drops of nitric acid did not alter the color, even after ebullition. A larger quantity of the acid being added whilst the mixture was boiling, converted the emerald-green color into a pinkish yellow; the green color was not restored by the subsequent addition of an alkali.

"C. Acetic acid scarcely affected the green fluid, producing no apparent coagulation of mucus.

"D. A solution of acetate of lead threw down a copious greyish-green tenacious precipitate, leaving the supernatant fluid colorless.

"E. Bichloride of mercury produced a light-green precipitate, leaving the supernatant fluid pale, but not decoloring it.

#### "Analysis.

"1. One thousand grains of the green fluid left, by careful evaporation, a deep olive-green, highly deliquescent extract, weighing one hundred grains.

"2. This extract (1) being immersed in alcohol of 0·837, formed a mass like bird-lime, which could not be mixed with the spirit. Even after long boiling it appeared hardly to diminish in bulk. The clear tincture being decanted, left, however, an extract weighing thirty grains. This residue possessed the yellowish-green color of faded leaves, an odor of fresh broth, and a sweet substringent taste, with a very slight admixture of bitterness.

"3. The alcoholic extract being carefully incinerated, left 5·5 grains of ashes, consisting chiefly of chloride of sodium mixed with mere traces of tribasic phosphate of soda ( $3\text{NaO}, \text{P}_2\text{O}_5$ ). It was alkaline, but did not effervesce with acids.

"4. The portion left undissolved by boiling alcohol yielded to water thirteen grains of nearly tasteless matter, which, by incineration, left a powerful alkaline ash, weighing 1·75 grains, not effervescing with acids, and consisting nearly exclusively of alkaline tribasic phosphate of soda.

"5. The residue, insoluble both in water and alcohol, weighed 57· grains, and consisted almost entirely of coagulated albumen, dry mucus, and modified blood. It left by incineration one grain only of ashes, consisting almost wholly of brick-red sesquioxide of iron.

"The following is a view of the results of the examination:

Alcoholic extract . . .	{	Organic . . . . .	24·50
		Inorganic . . . . .	5·50
Aqueous extract . . .	{	Organic . . . . .	11·25
		Inorganic . . . . .	1·75
Insoluble matter . . .	{	Organic . . . . .	56·00
		Inorganic . . . . .	1·00
Water and volatile matter . . . . .			900·
			<hr/>
			1000

"Regarding the chemical constitution of the organic portion of the alcoholic and aqueous extracts, the former consisted chiefly of fatty matter, cholesterine, and a green substance, probably identical with the so-called *biliverdin*, with mere traces of bile,

barely sufficient to communicate a bitter taste to the extract, and in too small a quantity to leave any carbonate of soda in the residue of incineration. The aqueous extract consisted chiefly of ptyalin, and the extractive matters comprehended under the general term of "*extrait de viande*," by Berzelius. The composition of the fluid part of the green evacuation may therefore be thus expressed :

<i>Biliverdin</i> , alcoholic extractive, fat, cholesterine with traces of bile . . . . .	24.5
Ptyalin, aqueous extractive colored by biliverdin . . . . .	11.25
Mucus, coagulated albumen, and hæmotosine . . . . .	56.0
Chloride of sodium, with traces of tribasic phosphate of soda . . . . .	5.5
Tribasic phosphate of soda . . . . .	1.75
Sesquioxide of iron . . . . .	1.0
Water . . . . .	900

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1000

"That bile may, and often must, be present in large quantity in the faecal dejections in disease, is certain; but that it is necessarily present in the green evacuations so common in early infancy, and under the influence of mercury, may be questioned. In Simon's analysis of a green calomel stool, a large quantity of bile was found; but in the specimen examined by myself but mere traces were detected. If any quantity of this secretion really existed, the alcoholic extract must have tasted bitter, and the ash must have contained an alkaline carbonate, as from the sparing solubility of phosphate of soda ( $\text{H O}$ ,  $2 \text{ Na O}$ ,  $\text{P}_2 \text{ O}$ ) in alcohol, there could not have been sufficient of this salt present to unite with the soda of the bile to form during ignition the alkaline phosphate ( $3 \text{ Na O}$ ,  $\text{P}_2 \text{ O}_3$ ).

"I have assumed that the green color of the matter examined was owing to *biliverdin*, a conventional term for a subject very imperfectly understood, and very likely applied to substances distinct in their nature. Berzelius has compared biliverdin to the chlorophylle, or green coloring matter of leaves, although this must be regarded as partaking rather of a wax-like nature than as a mere colored extractive. It must, however, be borne in mind that green coloring matter may be possibly generated in the animal economy from the action of certain matters on the hæmotosine or coloring matter of blood. Thus, it is well known that when blood is exposed to the influence of sulphuretted hydrogen gas, it acquires a deep olive-green color when viewed by reflected, and a dingy red, by transmitted light—phenomena identical with those presented by the coloring matter of bile. Attention has been drawn to this remarkable fact by Professor Leopold Gmelin. It is now ten years ago since a series of researches on the action of oxidating agents upon blood were published by Dr. Brett and myself. In that paper we described two products of the action of nitric acid upon clots of blood,—an olive-green sweetish astringent substance, and an intensely bitter yellow one; we applied the conventional term of chloro-hæmatin to the former, and xantho-hæmatin to the latter.

"Since, then, the coloring matter of blood is fully capable of being converted into green pigments under the influence of different agents, it must, I think, be admitted, that we are not to assume the green color of an animal excretion as of necessity depending upon the presence of an excess of bile. And when chemical analysis fails to indicate the presence of any quantity of this secretion in a bright green evacuation, it is but legitimate to seek for some other cause of this tint. The proportions of the so-called biliverdin very closely approach to those of the xantho-hæmatin before alluded to, and I confess that I am induced to regard the green color of the emerald and 'chopped-spinach' stools of children, as depending upon the presence of modified blood, rather than on an excess of bile.

"Believing that the green stools alluded to are but a form of *melæna*, I have often closely questioned the nurses of children voiding them, regarding the appearance of the evacuations before and after the development of the green color, and have almost constantly been told that streaks, or even clots of blood had been observed.

"I regard, then, the presence of green stools as indicative, not of a copious secretion of bile, but of a congested state of the portal system, in which blood is exuded very slowly and in small quantities, so as to allow of the color being affected by the gases and secretions present in the intestines; a state of things capable of readily

ending in melæna, in which the effusion of blood is so copious and sudden as not to give time for the occurrence of the changes alluded to.

"There is, moreover, a peculiarity in the green dejections of children and others whose portal circulation is congested, which, so far as I know, is quite distinct from any property presented by mere bile under similar circumstances; I allude to the effect of exposure to the oxygenating influence of the air upon them. When first voided, the 'chopped-spinach' stools are, in the majority of cases, of a bright orange color, and they assume their characteristic grass-green hue only after exposure to the air. The time required for this change varies remarkably. I have seen an orange-colored stool become green in a few minutes; and in the same patient, only a day or two afterwards, many hours may have been required to effect the same change."

## SECT. V. DISEASES OF THE GENITO-URINARY SYSTEM.

### ART. 23.—*On the Pathology and Treatment of Albuminuria.*

By G. O. REES, M.D., F.R.S., F.G.S., Assistant Physician to Guy's Hospital.

"When albuminuria sets in, it is often to be traced to exposure to cold, or a damp and cold atmosphere, under circumstances of depression and fatigue; sometimes, also, to intemperance, and more especially to the use of ardent spirits. The type this disease may assume, as regards the acute and chronic forms, would appear to depend on the age, constitution, and habits of life of the patient. Thus in some we find such exposure followed by immediate and violent reaction, indicated by a hot skin and dry tongue, with a hard pulse, pain in the head, and severe thirst, while pain in the loins, and sometimes, but not always, ischuria, point to the kidney as the seat of the mischief. The urine is high colored, loaded with albumen, and occasionally tinged with blood. The stomach is irritable, and vomiting not unfrequently occurs, while partial oedema of the face, or complete anasarca, are the most common concomitants. There is great liability to complication with serous inflammation in this form of the disease; and it is thus, in fatal cases, that life is most frequently destroyed. All symptoms which may be referred to the brain are to be carefully watched; as coma and epileptico-apoplectic seizures will sometimes suddenly prove fatal. When by early application of remedies this acute form of albuminuria is relieved, it appears probable that complete and permanent cure is sometimes effected; but again, in a large number of cases there is little doubt that such acute attack is followed, at no very distant interval, by the same set of symptoms, assuming a more chronic type; and that by repetitions of these attacks the patient sooner or later sinks.

Mild cases of short duration, and generally admitting of permanent relief, are often observed in children after scarlatina, occasioning the anasarca so common as a sequel to that disease.

As regards the chronic form of albuminuria, though we often find, on interrogating our patients, that they have before suffered from anasarca and other symptoms indicative of the previous occurrence of the acute disease, we as often meet with chronic symptoms as the first indicated by the patient; and these not unfrequently supervene in so marked a manner, and encroach so gradually on the comfort of the individual, that a practised eye is necessary to detect the disease by the slight indications now afforded, and which, when the condition of the urine has been overlooked, have often passed for those of dyspepsia, or inactivity of the liver. As regards the symptoms in this chronic form of the affection (though nearly identical in kind), we have them present in a less marked degree than when characteristic of the acute disease. The pain in the loins is much less severe, and sometimes absent. Ischuria, as in the acute form, is not necessarily a symptom, and more commonly, as stated before, large quantities of urine are voided; from 70 to 100 ounces per diem being no uncommon discharge. Anasarca is frequently wanting as a symptom, or only indicated by slight oedema of the face; thus the under eyelids are occasionally swelled, and that only in the morning, and sometimes so slightly that the patient does not observe it. Dyspeptic



ailments, with irritability of the stomach, are often present; and when complained of as producing vomiting, may seem to guide us to the examination of the urine, and consequent detection of the true nature of the patient's disease. In this chronic form of the complaint it is often observed that thus the urine becomes a source of irritation to the bladder, causing the patient to leave his bed several times in the night for the purpose of making water. This condition is not necessarily connected with a discharge of lithates or lithic acid, which are the common deposits in albuminuria, nor with any peculiarity of the excretion as yet ascertained.

There are many complications attendant on this disease of the kidneys, dependent in all probability on the state of the blood, though we are unable at present to trace the manner in which it influences the solids. It may be well to remark, however, in connexion with this subject, that the deficient proportion of albumen and hamatosine, the one observed in the early, the other in the later stages of the disease, are as prominently marked in certain cases of leucorrhœa going on to chlorotic anæmia, as in the disease of which we are now treating; and thus I have had occasion to prove the presence of urea in the blood, and that too in considerable quantity, in a case of the mild form of albuminuria occurring after scarlatina, and which was rapidly cured. These facts would seem to show that the state of the blood in albuminuria requires further experiment. The organs most commonly implicated in albuminuria, in addition to the kidneys, are the heart, the liver, and the brain; and in examining cases it is of great importance to ascertain their conditions, by physical signs, as well as by the evidence to be obtained from symptoms described by the patient. The state of the brain especially should be watched, as death is commonly occasioned by implication of that organ. In many cases, however, œdema of the glottis, with more or less bronchitis or sudden effusion into the pericardium, closes the scene.

The treatment of acute albuminuria differs materially from that adapted to the relief of the chronic form of the complaint, and the simplest means are sometimes capable of effecting a cure. This is remarkably the case in some instances of albuminuria, which follow scarlatina. In other cases, however, the acute form of the disease is attended with violent symptoms, requiring the active interference of treatment for the preservation of life; and this remark applies to some few cases of anasarca occurring after scarlet fever, though, as has before been said, those cases are for the most part mild in character.

In acute albuminuria I have always found the greatest benefit from treating the disease by the application of remedies which act upon the skin. The favorable results which have been observed from the use of antimony may be ascribed purely to its diaphoretic action; and further than this, I am inclined to prefer the use of ipecacuanha or Dover's powder, in which the opium assists us greatly in obtaining a ready action of the skin. The warm bath every other day, with acetate of ammonia and Dover's powder taken in a draught twice in the twenty-four hours, combined with the occasional administration of saline purgatives, will generally be found to afford relief in acute cases unattended with any inflammatory complication.

When, however, bronchitis or pneumonia are discovered to exist, we must have recourse to depletion with mercurials, but may still continue our diaphoretics as part of the treatment. As regards depletion in the acute stage of albuminuria, all that we know of the state of the blood in that disease would lead to its disuse, as a remedy having a tendency to induce the chronic form by decreasing the proportion of the red globules of the blood: and though I have occasionally observed benefit from the use of the lancet or cupping, I do not believe that it is at all superior to the diaphoretic plan; and unless rendered imperative by the presence of inflammatory complications, experience has made me averse to its use in every form of this disease. The strong objection to the use of mercury expressed by many writers on this subject, though it would appear justified by the results of some few cases which have been submitted to mercurial action, is not so strongly impressed upon my mind as to induce me to reject it altogether as a remedy in acute cases, even when no complications exist. It appears to relieve the kidney greatly, but care must be taken in its exhibition, as its effects are rapidly induced, profuse pyalism sometimes following the employment of only two or three grains of calomel.

In the more chronic form of the disease, diaphoretics are almost as necessary as in the acute stage, but we must now be careful not to produce a depressing effect upon

the system. Patients who are under diaphoresis should be constantly watched, and the remedy should be omitted on the first signs of loss of power of the pulse.

The free use of purgatives is of the greatest importance in commencing the treatment of the chronic form of the disease, and is a most powerful means of lessening the painful tension of the skin produced by anasarcaous profusion, and often relieves the patient in a surprising manner from the tendency to coma. The anæmia which exists in the chronic form of albuminuria is best remedied by those medicines which are known to influence the blood, as the ferruginous preparations. The lactate of iron in five grain doses three times a day, with some mild tonic, as calumba, is the best form of medicine with which I am acquainted.

As regards local treatment, counter-irritation is greatly to be advised in cases of chronic albuminuria which are not far advanced; I have known setons and issues in the lumbar region to be of much assistance in obtaining an early cure. Diuretic medicines should be avoided in most cases, as they are often observed to increase the distress when the pulse is hard, and the quantity of albumen excreted is large. In some cases, however, the ischuria which is occasionally observed may be relieved by a combination of digitalis and squills, but my conviction is, that as a general rule they had better be avoided.

## SECT. VI. DISEASES OF UNCERTAIN OR VARIABLE SEAT.

### ART. 24.—On the Treatment of Acute Rheumatism.

By P. M. LATHAM, M.D.\*

It needs little else than a perusal of the instructive volume from which the following observations are extracted, to convince us of the immense importance of a prompt and scientific treatment of acute rheumatism. On this point the remarks of the author are worthy of implicit confidence, being the result of labors conducted under circumstances the most favorable to the eliciting of truth; namely, those of extensive experience united to and guided by high scientific acquirements. In his tenth lecture, the author enters upon the consideration of the several indications towards which the curative endeavors of physicians are generally directed, and first of *bloodletting*. The power of this remedy, he observes, carried to its full extent, is in many cases undoubted, the entire disease being rapidly subdued by it, but in other cases it is far from being efficacious, or may even prove positively injurious. Upon the whole, therefore, he decides that the practice which proposes to cure rheumatism, at any cost of blood which may be needed, is an uncertain and a dangerous one.

Still, he observes, venesection is among the remedies of acute rheumatism, not needful in all cases, but expedient in many. "It is expedient to abate vascular action when it is excessive, when the patient is robust and young, and the disease has arisen accidentally in a healthy constitution. . . . But in the young, robust, and previously healthy, where vascular action is not excessive, and in the old, the feeble, and the previously valetudinary, even when it is, venesection is best omitted. There are other remedies which, without the help of bleeding, may be trusted to for its safe and effectual cure."

"Summarily, then, I would venture to say of venesection, employed under the most suitable conditions, and in the most suitable measure, that it is to be trusted, rather as preparatory and auxiliary to other remedies, than for its own exclusive power in acute rheumatism. It may often render the disease more curable by other means; but seldom cures the disease itself."

Of opium he says, that as the pain is often severe, "the dose must be large, and often repeated, which is to reach it and lessen it. In the severer cases, and when the whole treatment is left to the sole remedial power of opium, the measure and frequency of its dose must be enough to *subdue*, if it is to have a fair chance of tranquillizing."

\* Lectures on Subjects connected with Clinical Medicine, vol. I.

Upon the whole he regards the indications of treatment founded upon the state of the nervous system as safer than that founded upon the state of the vascular, and he looks upon opium consequently as a better remedy than venesection, and to be preferred to it, if we are to follow one of the two indications singly, and to use one of the two remedies only.

The third or derivative plan of treatment, which seeks to obtain from the abdominal viscera a large evacuation of their secretions, is thus spoken of. "The mode of proceeding is thus: ten grains of calomel are given at night, and a draught of salts and senna in the morning; and the same are repeated night and morning, as long as they can be well borne, and continue to produce their effect. The evidence that they are well borne, is that they occasion no distress, and the desired effect is that they bring away dark or bilious evacuations. If they induce tenesmus, and stools of pure bile or mucus and blood, it is a sign that they are doing injury, and should be withheld." This practice, which is due to Dr. Chambers, is strongly commended by the author. "In three days there is often a signal mitigation of the symptoms; and in a week I have seen patients who have been carried helpless into the hospitals, and shrieking at the least touch or movement of their limbs, risen from their beds, and walking about the ward quite free from pain." And again, "If in the treatment of acute rheumatism you were to choose one indication, and abide by it, and to trust to one class of remedies and to one only, you would find more cases that admit of a ready cure by the method now described, than by either of the two former. You would find the aggregate of morbid actions and sufferings which constitute the disease, more surely reached and counteracted, and more quickly abolished by medicines operating upon the abdominal viscera only, than by those which influence either the blood-vessels only, or the nerves only. . . . It has appeared to me not only to bring the disease to a speedier conclusion, but to prepare the way for a more rapid convalescence than the other methods."

Having thus spoken separately of the three methods of treating acute rheumatism, by taking the state of the vascular system as the main indication, by regarding chiefly the condition of the nervous system, and thirdly, by producing a derivative effect upon the intestinal canal, the author proceeds to remark that although each may in certain cases be successful singly employed, the most successful mode of treatment is a compound of the three: "For," he observes, "I believe that by the judicious use of opium you may spare blood, and by the judicious use of bleeding you may spare opium; that by calomel and purgatives properly administered you may make bleeding and opium less needful, and that by bleeding and opium discreetly employed you may leave less to be effected by calomel and purgatives."

Of colchicum, Dr. Latham remarks, that "single-handed it cannot be trusted for the cure of the severer cases, but it can in the milder, and I have so trusted it, but I do not recommend the practice. Colchicum given alone, has been slow, even in these milder cases, of making its curative impression. Many days have generally elapsed before it has produced any abatement of swelling and pain, of vascular action and fever; and then, not until it has *begun to purge smartly and even painfully*. Finding then that in the milder cases I had no fair chance of obtaining from it the virtue of a remedy without running some hazard of its acting as a poison, I considered it much too hazardous an experiment to commit the treatment of acute rheumatism to it, mainly or entirely, in the severer cases."

[The customary mode of exhibiting colchicum, is to combine it as an auxiliary to other medicines. Dr. Latham objects to its being so employed, but reserves it for special emergencies, when he trusts to it with great confidence. His words are these:] "When by venesection and by opium, and by calomel with purgatives, excess of vascular action, and fever and pain are abated but not entirely abolished; or when pain and swelling do not subside in proportion to the abatement of the vascular action, then I invoke the aid of colchicum, and give twenty or five and twenty minims of the wine of the seeds or the root, twice or thrice a day, and I often find the disease proceed uninterruptedly to a cure."

[The author likewise trusts to colchicum in cases of relapse. As he observes, he gives it without combination, so that there can be no hesitation in allowing that the beneficial effects are essentially due to its specific virtues, for the cure has occurred prior to the production of any irritation of the bowels.] (Pp. 180-218.)

ART. 25.—*On the Treatment of Scrofulous Diseases.* By M. SANDRAT.*(Bulletin de Thérapeutique, Encyclographie Médical, Août.)*

[The expensiveness of the preparations of iodine as general remedies in the treatment of a class of diseases which for the most part affect poorer portions of the community, and fall to the care of charitable institutions, led the author of the present communication to devise a plan of treatment which should as far as possible be independent of iodine, and yet be not less efficacious. The medicines which he employs with this intention are not new; the extract of walnut shells in particular (vide 'Abstract,' vol. i., p. 98), has been extensively used in Germany, but the order in which he exhibits them, invests his communications with a certain degree of utility and interest. As may be supposed, M. Sandrat attacks at the same time the general health, and the local disease: his plan is as follows:]

1. He takes care in the first place to keep his patients upon a generous diet, consisting of roast or fried meats, bread and vegetables, with wine or wine and water, according to circumstances. A mixed diet is found by him to agree with the majority of patients better than one exclusively animal or vegetable.

2. He is very particular to enforce exercise in the open air, until a slight sense of fatigue is induced.

3. Three sorts of baths are employed by him; the gelatinous, the alkaline, and the sulphureous; others are also occasionally used, as the alcoholic and the iodine, but their expense precludes their general use in hospitals. The gelatinous baths are intended to soften the skin and subdue irritation either general or local.

The alkaline baths, which are made either with soda or ordinary soap, are indicated when slight stimulation is not injurious; when a greater degree of stimulus is wanted, in cases of flabby ulcerations, he is in the habit of prescribing sulphureous baths, as they do not produce the relaxing effect upon the tissues which always follows the use of plain baths in scrofulous habits.

4. In addition to baths, the author makes use of three principal internal medicines; these are iodine, the extract of walnuts, and steel.

Iodine is given under different forms; as a tincture,—under the form of hydriodate of potash,—in simple solution,—in pills of the iodide of iron, or lastly as the proto-iodide of mercury, or as it is found in the cod-liver oil. Whatever be the preparation exhibited, the author agrees with Lugol in recommending the dose to be small. He complains, however, that the tincture of iodine, the ioduretted hydriodate, and the iodide of iron too readily decompose; the cod-liver oil he finds too nauseous; the iodide of potassium, therefore, in solution either simple, or with the addition of iodine, is the formula which he generally prefers. He adds that these medicines have been serviceable when combined with others, which he is about to mention, but that as he has latterly tried these without the iodine with equal success, he does not consider that the latter is deserving of the extreme laudation which it has received at the hands of some physicians. Indeed he thinks that he is now able to replace iodine with a medicine equally efficacious, and more easy of administration. This medicine is the extract of green walnuts.

The ordinary form in which the extract is exhibited, is that of syrup, of which the patient takes a teaspoonful several times a day. By this treatment, he states, that the appetite is increased, digestion is improved, and the scrofulous aspect is gradually dissipated.

As regards steel, M. Sandrat exhibits it chiefly as an auxiliary, and considers it one of incontestable power. He gives it therefore in all anæmic cases, and especially in young scrofulous females.

[It is not an opinion confined to M. Sandrat, that the power of iodine in scrofulous disease has been much overrated, more particularly by its great advocate M. Lugol. Baudelocque (*Traité des Maladies Scrofulieuses*) does not hesitate to avow that he has frequently been disappointed in it, and that it fails to cause the absorption of tuberculous matter. We are disposed from a very considerable experience of iodine in all forms of scrofulous disease, to range ourselves on the side of Lugol, and are inclined to think that much of the discredit which is attached to the medicine, may in France be traced to a spirit of jealousy, from which unfortunately the greatest names are not entirely exempt. In this country it is different. As we have taken occasion to re-

mark in another place (*Researches and Observations on the Causes of Scrofulous Diseases*), much of the want of success with iodine is to be attributed to the little discrimination with which it is given, the doses being in general too large, and too long continued. For our own parts we can conscientiously say that every day adds to our confidence in its virtues.]

ART. 26.—*On the Pathology of the Tuberculosis.*

By DR. CLESS, Practising Physician at Stuttgart.

(*Schmidt, Jahrbuch, Heft iii., 1845.*)

In this essay the author treats of the occurrence of tubercles in these several organs.

A. *The Lungs.* Here tubercles are so frequent that Louis established the principles, that, in every case in which tubercles are found in other organs, they exist in the lungs also; that tuberculosis in the lungs is always much further extended than anywhere else; and that in consequence, the presence of tubercles in the lungs would appear a necessary condition of their development in any other part.

Recently, however, exceptions to this have been not unfrequently observed.

Amongst 152 cases of adults suffering from tubercle, that were examined by the author (where tubercles were present either in the peritoneum, the pleura, or in the bronchial and mesenteric glands simultaneously), he found six where the lungs were free from tubercles; also in some special cases the tuberculosis was more important and further extended in some other organs (the peritoneum and lymphatic glands), than in the lungs. Yet the rule ever remains standing, that in the great majority of cases, tuberculosis of the lungs forms the predominating affection, although frequently during the life-time, disease in the other organs appears the more intense.

In childhood, however, tubercles of lungs do not seem to predominate, but rather tubercles of the bronchial and mesenteric glands. Nevertheless, the observations of the author and of Barthez and Rilliet tell for the contrary. With children, as well as with adults, the lungs must be held to constitute the chief seat of tubercles, save that with them the exceptions are somewhat more numerous than with adults.

The author further found, in more than three-fourths of the cases which he examined, tuberculosis simultaneously spread over several organs. The number of cases of insulated tuberculosis in childhood is very small; the tendency towards general diffusion being strong. The author rarely found one lung only affected with tubercles; when that did occur, it was, in the majority of cases, the right lung which suffered, that being also, when both were diseased, the one most extensively affected. This observation refers equally to children and to adults. In most of the adult cases observed by the author, the tuberculosis of the lungs advanced to the formation of vomicae; this, however, occurred less frequently in children. Barthez and Rilliet found them in not quite one-third of the cases which fell under their notice. It is chiefly the acute tuberculosis which causes death before the ripening of the tubercles, and this is with children by far more frequent than with adults; yet chronic phthisis often exists without ever arriving at the formation of vomicae. Death occurs with children more frequently by the intercurrent of other diseases (particularly acute hydrocephalus).

As concerns the seat of tubercles in the lungs, they begin usually in the apex and in the upper lobe, and spread from thence to other portions of the organ. It is but seldom that an exactly equal degree of intensity and development of tubercles is observed at the same time, in both the upper and lower lobe (and when it is so, it is usually a concomitant of the miliairy form). In some cases, indeed, the author found the seat of the tubercles in the lung to be exclusively in the lower lobe, but then the tubercles were insignificant and secondary; more frequently, indeed, in a complete case of pulmonary phthisis the disease was found to have been confined to the upper lung until its terminal stage.

B. *Bronchial Glands.* Among 152 cases of adult bodies with tubercles which he examined, the author found eight only with tuberculosis in the bronchial glands. These eight arrange themselves into three classes: 1st. Those accompanying the more diffused tuberculosis; these were four in number. 2dly. Those accompanying tuberculosis of the lung without considerable diffusion of the disease in any other organ; including two cases. 3dly. Those in which it was the only, or at least the

prevailing affection; they also were two in number. None of these individuals were above thirty years of age.

It is an established fact, that with children the bronchial glands are very frequently, and by far more frequently than with adults, the seat of tubercles. Some writers have however gone too far, in asserting that the phthisis of children is chiefly or alone a consequence of bronchial tuberculosis. The author never found tubercles in these glands alone, but always accompanied by simultaneous affections of other organs.

Barthez and Rilliet maintain that very few cases of insulated bronchial tuberculosis are met with, but that they are generally united with corresponding affections of the pleura and lungs. Bertin also assigns a secondary place to bronchial phthisis, and according to him the tuberculosis of the bronchial glands diminishes in frequency from one decade of years to another, and never occurs after the close of the third decade. Barthez and Rilliet knew no important difference in the frequency of the occurrence of bronchial tubercles in the several ages of childhood, or at most observed a very small preponderance in young children, while Bertin remarked the disease three times as frequently between the ages of two and eight years, as between nine and fourteen years.

c. *The Larynx and the Trachea.* Pathologists are at variance upon the nature of ulceration of the larynx and of the lining membrane of the trachea in phthisical patients; Louis declares that he never in one single case found tubercular granulation in these organs; he therefore attributes the origin of the ulcers almost always to a simple inflammatory process, occasioned by the irritation of the expelled matter frequently resting on its way; yet it has recently been placed beyond all doubt (by Rokitanaky and Hasse), that a third part of the ulcers found there, are really of tubercular origin, while certainly the erosions so frequently observed seem to be the product of a simple inflammatory, catarrhal, or aphthous process. The author also in many cases convinced himself in the most decided way, of the tuberculous nature of these ulcers, yet he found some where no tuberculous formation was to be discovered.

Deep ulcerations appear most frequently to be seated in the larynx; and superficial ulcers are more frequently found in the epiglottis and trachea.

Amongst the cases observed by the author, not a single one appears where the tuberculosis or ulceration of the larynx and of the trachea formed the primary and predominating affection; it was always secondary and attendant upon the simultaneous disease of the lungs.

According to Louis, ulcerations of the larynx and trachea are twice as frequent in men as in women; and according to Hasse they occur most often between the twentieth and twenty-fifth years of age. In childhood these ulcerations are very rarely found.

d. *Pleura and Peritoneum.* Tubercles in serous membranes are ordinarily regarded as signs of tuberculous inflammation (pleuritis, peritonitis, and tuberculosis); but a true inflammatory process is not always connected therewith. This tuberculosis is with phthisical patients of rather frequent occurrence, and attacks all ages from early infancy to advanced years; but it is perhaps with children rather more frequent than with adults.

If with adults the pleura is more frequently affected than the peritoneum, yet tubercles of the peritoneum, when they do occur, are more general and more productive of serious after consequences; so also the symptoms produced by tubercles of the peritoneum appear with more intensity and virulence.

Chronic peritonitis, when not produced by organic disease of some of the abdominal organs, is founded almost without exception on tuberculosis of the peritoneum, and very frequently a simultaneous affection of the lungs is more or less and sometimes altogether masked by the appearance of peritoneal disease. Tubercles of the pleura and peritoneum present themselves, it is true, most frequently as secondary affections, and principally as the product of intense universal tubercular dyscrasia; yet they do occasionally appear as primary, and even as the only tuberculosis. So also the author observed upon the pleura, broad, flat, confluent tubercles, single and insulated; the same upon the peritoneum, where he also remarked a peculiar appearance of the tubercular matter. Each single tubercle was at its base surrounded by a black or blue-black ring, formed by melanotic segment; sometimes a red border around the tubercles of the peritoneum and pleura, was also seen.

According to the observations made by the author, the peritoneum and mesenteric

glands are seldom affected with tubercles at one and the same time; indeed, a high degree of the disease in the one, appears almost entirely to arrest or prevent it in the other. This was established by Barthez and Rilliet; but Rokitsansky asserts, on the contrary, that the result of tuberculosis of the peritoneum is usually tuberculosis of the abdominal and lymphatic glands.

*E. Heart and Pericardium.* Tubercles on the pericardium range amongst pathological rarities, and do not easily attain to a serious and excessive degree. According to Rokitsansky they usually arise out of the tubercular metamorphoses of an inflammatory exudation; this, however, in one case observed by the author, was not confirmed.

With children, tubercles in the pericardium and upon the serous membranes, occur more frequently than with adults. The author never saw tubercles in the muscular tissue of the heart; they do indeed present themselves there very rarely, and thence spread. Upon the endocardium and upon the lining membrane of the vessels, according to Rokitsansky, they never appear.

*F. Intestinal Canal.* Tuberculosis of the intestinal canal appears in two states; as submucous tubercular-granulation and infiltration; and as ulcer. (Probably many enlargements of the mucus-follicles and erosions are mistaken for tuberculosis.)

The author found in 83 cases (that is, in more than the half of those which he observed), that the small intestine was affected; and in about a fourth part of them (namely 37) he found the large intestine also suffering. Louis, on the contrary, observed with five out of six of his phthisical patients, ulcers in the small intestine.

Tuberculosis of the intestinal canal is of frequent occurrence at all ages. It is found the least often in extreme old age, and in the earliest periods of childhood. It is to be remarked, that in the experience of the author, the occurrence of tubercles in the intestine was less frequent between the 30th and 40th years of life than in any other period, whilst in the preceding and following decenniums with two thirds of the tuberculous subjects, tubercles were found in them. Of these two thirds, it appeared that between the ages of 30 and 39 the half were diseased in that organ.

As concerns the affection of the large intestine, it appears that between the 20th and 30th years of life there is strong disposition in this disease to seat itself there, since more than the half of the whole cases in which it was found there occurred in this period. In no single case of tuberculosis of the intestine did the author find the disease existing there alone; neither did he ever find it predominant and inclined to spreading when there was simultaneously existing tuberculosis of the other organs. It consequently appears that it never here exists as an isolated or primary affection.

The author only once found ulcers in the stomach and œsophagus; Barthez and Rilliet, on the contrary, remark that the stomachs of young children appear to be more frequently affected than those of older persons, the reverse of which is observed with regard to the small and large intestines.

Ulcers in the duodenum are very rarely found; but when present, according to the observation of the author, they most frequently commence near the lower portion.

As concerns the affection of the large intestine it is most commonly found existing simultaneously with that of the small intestine, though it is indeed in some exceptional cases found where the small intestine remains healthy.

The cæcum and ascending colon are frequently attacked by tuberculosis: the further downwards the less frequent the affection; the author never found it reaching below the descending colon.

Whilst the tuberculosis of the large intestine is of more rare occurrence than that of the small intestine, yet, in some individual cases, the former reaches an intensity never observed with the latter.

*G. Mesenteric Glands.* In these glands both Louis and the author found tuberculosis in a fourth part of their phthisical patients, and at all ages; yet they appear more liable to attack in advanced age than in the prime of life. They were seldom affected in any preponderating degree between the 30th and 39th years of life, whilst during the preceding, and still more during the following decennium, the proportionally largest number of cases was presented. With children, however, the tuberculosis of the mesenteric glands appears to be somewhat more frequent than with adults of middle ages (but with them it seldom presented isolated or in preponderating degree, and mostly only as the accompaniment of a general and diffused tuberculosis). Barthez and Rilliet found indeed the existence of tubercles here in almost the half of their

cases; but only in one of 22 children were they of any serious extent. They found also that in these glands they scarcely ever appear before the third year.

The author thinks that it is without reason that these glands, together with those of the bronchia, have obtained so prominent a degree of attention in our days, amongst children's diseases. The too conspicuous rank given to them is caused by a mistaken opinion respecting the enlarged bellies of children, to which this character has been given; these enlargements, however, are often altogether independent of tuberculosis or other degeneration of the mesenteric glands.

So far as concerns the connection of the tuberculosis of these glands with that of other organs, it appears only, in general, associated with further developed deposits in other organs, as the sign of a high degree of tuberculous dyscrasia, and holds only a secondary and subordinate place. That organ in which tuberculosis most frequently accompanies tuberculosis of the mesenteric glands, is the intestinal canal; yet tubercles in the mesenteric glands are nevertheless independent of the formation of ulcers in the intestinal canal. The latter frequently occasions simple redness and swelling of those glands.

Mesenteric and peritoneal tubercles are seldom found simultaneously. In one case, indeed, the author found fully-developed mesenteric tubercles (with deposition of bone-earth) in a female patient aged 41, who died of pulmonary phthisis. The lungs, with the bronchial and mesenteric glands, are the only organs in which the author has observed the process of earthy deposition.

**h. Liver.** In adult age this organ is one of those most rarely attacked by tubercles, which when they do occur scarcely ever progress very extensively. The tuberculosis stands here in strong contrast with carcinoma, whose especial seat is in the liver. With children, however, tubercles of the liver are more frequent. Barthéz and Rilliet found their existence in this organ in one fourth of the cases of children affected with tuberculosis, but generally in a secondary and subordinate degree as compared with their presence in other organs.

1. **Spleen.** With adults tubercles are here also seldom found, and scarcely ever do they arrive at any extended development or occur in large masses. But it is otherwise with children, with whom Barthéz and Rilliet found them present in more than a third part of their cases; and in intensity exceeding on the average that of the other organs. Tubercles in the spleen are, according to the author, not only very frequent with children, but, if we except the lungs and the serous membranes, in no other organ do they so often appear. The volume of the spleen is thereby usually increased; it sometimes, however, is observed that the spleen is quite covered with them and yet retains its ordinary size, the parenchyma being sometimes softened and at other times of natural consistence.

It is worthy of observation that, notwithstanding the frequency and intensity of tuberculosis of the spleen in childhood, yet it never appears as a primary or insulated phenomenon. In the majority of cases tubercles of the spleen are the concomitants of diffused and general tuberculous disease. Never during life are they known by any separate or special symptom.

The author has often observed the commencement of the softening process of tubercles of the spleen, but never their actual and entire liquefaction accompanied with the formation of vomices.

The disposition of the spleen to tuberculosis does not appear (as is the case with the bronchial glands) to be entirely lost with old age.

**k. Kidneys.** Here tubercles are presented at every age; they are, however, decidedly more frequent in children than in adults, yet they are with them also subordinate to other affections, and seldom obtain an intense degree.

The parenchyma of tuberculous kidneys has always been found by the author in a perfect condition, with the exception of one case, where it was found considerably congested. In the greater number of cases, the tuberculosis of the kidneys was almost entirely unaccompanied during life by any appearance of disease proceeding from it. With some adults in the last stage of phthisis, diabetes insipidus appeared, which, however, the author regarded only as a symptom of general wasting, and independent of the tuberculosis of the kidneys (analogous to the colliquation of diarrhoea), since in the last stage of phthisis and with unaffected kidneys he repeatedly observed the same.

With a boy of 12 years old, in whom the tuberculosis of kidney had reached the



highest degree, the urine was strongly albuminous, without the kidneys presenting any appearance of granular degeneration (Bright's disease).

**L. Uterus, Fallopian tube, and ovary.** The tubercular degeneration of the internal genital organs of women has received too little attention. The author observed it six times; and it is by no means of infrequent occurrence, though Rokitanaky asserted that tubercles are never found in the ovary.

The author saw tuberculosis of the uterus under three forms: 1st. As tubercle deposited in the substance. 2d. As resting upon the inner superficies. 3d. As converting the whole substance into tubercular matter.

In all cases of tuberculosis of the genitals, there also existed simultaneously the same disease in the adjacent regions of the belly and bowels, but the former appeared only as secondary, and as the expression of a high degree of tubercular dyscrasia. Conspicuous symptoms marked the affection only in one case; in this its similarity with those of cancer of the uterus was worthy of observation.

At all ages, and also before puberty, the author found the tuberculosis in the parts indicated. Rokitanaky observes, of the tuberculosis of the uterus, that it never extends beyond the *os uteri internum*, and that it never attacks the vaginal portion (in which it differs from cancer).

**M. Brain and its membranes.** The French pathologist first observed the so-named tuberculosis of the arachnoid, which is important on account of its relation to *hydrocephalus acutus*.

The author found arachnoidal tubercles in five children, between the ages of 8 months and 11 years, and with the exception of one case, the affection was always associated with acute hydrocephalus. In all these cases, tubercles existed in the lungs, and in most of them, in other organs also. Barthez and Rilliet once found tuberculosis of the meninges isolated.

Tubercle of the arachnoid easily escapes observation, for it is frequently obscure and of no great extension. Tubercles here are always found on the outer side of this membrane, between that and the pia mater, never upon the inner, whilst this is the case with the other serous membranes. These observations are quite in accordance with the appearance of the simple normal serous effusion, as well as of the product of inflammation of the arachnoid being only to be found on the outer side.

Valleix has described tubercular arachnitis in adults, and affirmed that it is present wherever, in adults, inflammation of the membrane of the brain, or effusion from hydrocephalus exists. The author contradicts this last assertion.

Arachnitis with purulent effusion and hydrocephalus, are certainly often present with adult tubercular subjects, without, however, being necessarily accompanied with tubercular granulation in the arachnoid.

Tubercle in the arachnoid holds certainly a secondary place amongst the other diseased products of the brain.

Tubercles in the substance of the brain are by no means infrequent with children. According to Green they occur most between the ages of 3 and 7 years. Sometimes one single tubercle is found there, and sometimes also they are more in number. This seat is more frequently in the hemispheres of the cerebrum, than in those of the cerebellum. According to Green, in no case were tubercles exclusively confined to the brain, but they always existed simultaneously in the cavities of the chest or abdomen, yet the greater development of the cerebral tubercles induced the presumption that the disease had originated there. Barthez and Rilliet observed two cases of isolated tuberculosis of the brain. According to the fore-named authors, the coincidence of cerebral and arachnoidal tubercle was frequent. This, however, was not confirmed by the author.

**N. Lymphatic glands.** With diffuse tuberculosis it is not infrequent that the glands of the neck, shoulders, abdomen, &c., present degenerated tubercle; also in that case the subcutaneous cellular texture is not infrequently the receptacle of tuberculous matter, which then produces ulceration of the skin.

**O. Muscles, bones, and joints.** Although mention has scarcely ever been made of tubercles in the muscles, yet the author twice found them in the case of children suffering under the highest degree of scrofulous or tubercular dyscrasia (they were existing in the *musc. soleus*, *gluteus*, and in the *tendo achilles*). In both cases, tubercular disease of bones was found in the neighborhood of the affected muscles. The tubercles were of roundish form, and from the size of millet grains to that of

hemp-seed, of whitish yellow color, and mostly solid, but some of them half-liquified, and resembling pus. Rokitsansky denied the appearance of tubercles in muscle in the form of original grey tubercles; according to him they are no more than tubercular exudations.

Tuberculosis of the bones is in a majority of cases the cause of pain in the bones in scrofulous and phthisical subjects. These tubercles also occasionally appear isolated and without the simultaneous affection of inward parts. Even with adults, tubercular affections of the bones sometimes appear.

In the joint itself also, and in its soft parts, the author once found tuberculous degeneration (namely, in the sterno-clavicular articulation), and at the same time the ends of the bones were carious and impregnated with tubercular matter.

The author has never found tubercles in the thyroid gland, in the pancreas, in the salivary or in the mammary glands. The testimony of Rokitsansky supports his experience, that in these organs they are never presented. On the contrary, tubercles in the testicle are often spoken of by writers. Rokitsansky also mentions them, and says, "they not infrequently appear there first, and spread from thence to the other sexual and urinary organs."

The frequency with which the several organs subject to tuberculosis are, in the case of adults, liable to the disease, is in the following proportion: Lungs 146, small intestine 83, mesenteric glands 38, large intestines 36, peritoneum 18, pleura 13, larynx and trachea 10, bronchial glands 6, external lymphatic glands 6, female parts of generation 5, spleen 4, kidneys 4, bones and joints 3, liver 2, membranes of the brain 1, pericardium 1; all together 152.

The proportion as given for childhood would be very different, and in advanced age also, particular exceptions occur.

The lungs at every period of life are the most liable to tuberculosis, but the cases in which the lungs remain sound, whilst other organs are attacked, are yet more scarce in adult age than in childhood; and the difference between the frequency of tubercles in the lungs, and their frequency in the organ standing next in liability to attack, is with adults much more considerable than with children.

In childhood, next after the lungs, the bronchial glands are most exposed to this disease; but with adults its occurrence there is rare, and almost unheard of after the 30th year.

In like manner, the presence of tubercles in the mesenteric glands is more frequent in childhood than in adult age, yet the difference here is not great; and the affection of these glands is secondary in importance to that of the bronchial glands. With them, however, liability to tubercular degeneration does not appear to be lost with advanced age.

The liver, spleen, and kidneys are more frequently affected with tubercle in children than in adults. Of these three organs, the spleen is with adults the most rarely attacked.

Cases of tuberculosis in the serous membranes, are also in childhood more numerous than in adult age; especially in the arachnoid, and in the brain itself.

On the other hand, adults are most liable to tuberculous disease in the intestinal canal. Tuberculosis of the larynx and of the trachea appears particularly to occur between the 20th and 40th years of life. With children it is very rare, and it is infrequent also in old age.

The internal genital parts of females may be attacked at any age; yet such affections are less frequent in childhood than in adult years.

The question whether a physiological law may somewhere be established according to which the development and distribution of tuberculosis in the several organs may be ranged, can hardly yet be answered. The assertion of Hasse, that "the development of tubercle in the different organs happens most frequently simultaneously with their greatest physiological activity," is easily confuted by matter of fact.

With regard to the difference of tuberculosis in childhood and in adult age; so much may perhaps be explained, that with a fixed tubercular dyscrasia in the organs of children, the specific matter of the disease is deposited with greater ease, and in larger abundance in the different organs, on account of the changes of tissue, and of the freedom of the function of nutrition and circulation at that period of life. Doubtless these circumstances have their effect as respects the tendency of individual organs to tubercular affection, or the contrary.

That tuberculosis has in childhood a greater tendency to general diffusion, than later in life, is an established fact. Amongst the children who fell under his notice, the author found only one case in seven, where the disease was confined to one organ or one cavity of the body; whilst on the contrary, it was with one-fourth spread over all their cavities.

With adults as with children, tuberculosis manifests a tendency to general diffusion; but the disposition is more strongly marked in childhood. In one-fourth only of his adult cases did the author find the affection confined to one organ, and with more than two-thirds it had established its seat in all the three cavities of head, chest, and belly.

This tendency of tuberculosis to general diffusion in many organs, and to diffusion also amongst the whole human race, is the essential and proper characteristic of the disease, and has procured for it the character of being the most universal of all diseases.

#### ART. 27.—*On the Treatment of Diabetes Mellitus.*

By G. OWEN REES, M.D., R.F.S., and Assistant Physician to Guy's Hospital.\*

The treatment of diabetes proposed from time to time has varied greatly in character. It is true that for the most part it has agreed in the one particular, in consisting of means directed to the stomach; but still some of those remedies considered as the most efficacious have been such as in health greatly tend to the derangement of that organ. Among the most powerful of these may be placed opium, which, in combination with other medicines, is frequently of service in checking symptoms, and has occasionally been known so far to restore the patient as to justify a hope that permanent benefit has been obtained. As regards the stomachic remedies, we find the alkalies and acids have both been fully tried; and the alkaline earth magnesia is still highly prized, as of service in this disease, by many experienced practitioners. Nitric acid has enjoyed an equally high reputation in the hands of others; and I have recently seen apparent advantage derived from the continued use of hydrochloric acid. It has always appeared to me, however, that the cases most benefited by treatment have been those in which no special regard has been paid to a specific remedy, but where general principles have been carried out steadily, and so as to meet every emergency as it arose. The use of opium, though it is always found to diminish the quantity of water excreted, can in no way be regarded as an advisable measure, if it be exhibited in its uncombined state. Large doses become eventually necessary to keep up the effect first produced; and whatever apparent benefit may be observed in the secretion of the kidney, we find the general symptoms of the disease become aggravated, and, moreover, that considerable difficulty is experienced in desisting from the use of the remedy. The Dover's powder is a favorite medicine in this disease, and I have constantly seen the greatest benefit follow its use, and considerable relief afforded to the patient by its bringing about the partial restoration of the function of the skin. In acute cases, when pain is felt in the loins or head, the use of this remedy, combined with the *hydrargyrum cum cretâ*, in small and divided doses taken during the day, will be found a most valuable means of decreasing action, and with the use of moderate bleedings greatly to assist in affording relief to the drowsiness which forms a distressing symptom in some cases.

In addition to the above remedies, I know of none more applicable in the chronic form of the affection than magnesia taken frequently during the day. Warm bathing at intervals of a day or two is of great assistance; and if we can sufficiently restore the powers of our patient, this may afterwards be replaced by cold sponging or the shower-bath. It is absolutely necessary, however, that the pulse should improve, and the power of undergoing fatigue have increased, before the skin is called upon for this reaction, and the cold bath should always be taken immediately on rising from the bed, when the powers of life are recruited and in full vigor. Among the tonics which have acquired credit in the treatment of diabetes, are several metallic salts; the sulphates of zinc and iron and the phosphate and lactate of the latter, have been used with benefit. Various vegetable tonics have also at times flattered the practitioner into a belief of their efficacy. Whatever may be the plan adopted, however, one important

\* *Analysis of the Blood and Urine.* 2d edition, p. 171.

indication should never be lost sight of, and that is, the constipated state of the bowels almost always observed in this disease.

The importance of attending to this point will at once be obvious, when we remember the emaciation so characteristic of this affection, and the propriety of affording as large a surface as possible of intestine for lacteal absorption, which cannot take place if the intestinal canal be obstructed. As regards the diet best suited to this form of disease, it appears anything but reasonable to subject the stomach to the severe discipline which has been applied by the fashion of the day in prohibiting the use of vegetable food, and restricting the patient to a purely animal diet.

All the benefit derived from this plan of treatment consists in the fact that the profession are now well aware that the diabetic stomach will not convert fibrinous and albuminous ingesta into sugar, but that any advantage has accrued to the patient is greatly a matter of doubt. Several cases, which I have seen do best, have not been so restricted as regards vegetable aliment, but have been fed upon a wholesome mixed, but restricted diet. The patient should be allowed his ordinary food, unless it be of a nature obviously calculated to produce or maintain dyspepsia; the restriction being made in quantity rather than in quality or proportion. As regards drink, not only much good, but agreeable relief from thirst, is to be obtained from the use of seltzer water, the salts contained in it probably exercising an immediate influence on the condition of the blood. Wines, spirits, and beer, should be avoided in the more acute forms of this disease, but they become necessary to maintain power in the more advanced stages.

## SEC. VII. DISEASES OF THE SKIN, &c.

### ART. 28.—*On the Diagnosis and Treatment of Porrigo Favosa.*

By D. J. CORRIGAN, M.D.

(*Medical Times.*)

In a paper on this subject, appearing in the Hospital Gazette, Dr. Corrigan first notices the confusion arising from the varieties in description and treatment applied to the affection; the mild and intractable forms of disease of the scalp being confounded together, from want of accuracy in diagnosis; and the difference of nomenclature of one and the same disease, adopted by French and English writers, creating so great a perplexity in this class of affections, that any one of them may be spoken of by any two writers, or two persons in conversation, each person having at the moment an entirely different disease in view.

The author's leading object is, he observes, to induce us to look on the disease as possessing a single and fixed character, incapable of subdivisions, which are as useless as they are unfounded. Whether the affection attacks a limb, or appears as a solitary areola on the scalp, or covers its whole surface, or involves a large portion of the surface of the body, its characters are unvarying. The modifications assumed to exist by Bateman, and named by him *porrigo larvalis*, *porrigo granulata*, and *porrigo scutulata*, are represented by *impetigo*, while *porrigo decalvans* and *furfura* are not pustular diseases at all. We have then remaining only the *porrigo lupinosa* of Bateman, or the genuine scall, possessing characters so different, that Dr. Corrigan observes, it is matter of surprise that it could ever have been confounded with any other disease. In order to distinguish the peculiar incrustation of *porrigo* from the scales of *psoriasis*, which sometimes accumulate to such a degree as to resemble the scab of *porrigo*—the difficulty being occasionally increased, too, by the co-existence of these two diseases—the author recommends the head to be shaved and poulticed until the entire scab disappears; the scab to be then washed clean with soap and water, so as to present a clear, smooth, red surface; upon which, within some days, a few, often not more than three or four minute particles appear, not prominent, but like dots of transparent matter embedded in its surface; a period from seven to fourteen days will be sufficient to trace the progress of their growth; in twenty-four hours after their first appearance they

become solid, depressed in the centre, and of a pale yellow or sulphur color, having frequently a hair in the centre, presenting the cup-shaped surface of the peculiar pustule or favus of porrigo, the contained matter being so dry as to be almost friable. The growth of this cheesy, friable substance now goes on very rapidly, the color changing to a greyish-white, and at length accumulates to such a degree as to resemble lumps of mortar sticking on the head, with a peculiar odor resembling that from urine; but the singularity of its development is, that if a portion of the scab be removed, by slight traction or poultices, there is merely the red surface beneath; no ulceration of the skin, no formation of purulent matter, which in drying, might form the thick scabs lying on the surface, thus evincing a mode of growth, in the incrustation itself, entirely independent of any ulcerative process or suppuration in the skin. If an eczematous scalp be similarly treated, the scalls are observed to form gradually on the inflamed skin, the peculiar favi of porrigo never appearing; or, if the disease be impetigo, the cleared surface is seen to pour out, like an oozing, a semi-transparent, honey-colored secretion, which soon dries into a soft, greenish-colored scab; but here, as in eczema, and all the other diseases of the scalp, the peculiar pustule of porrigo, running through the above-described stages, is absent.

We have, however, Dr. Corrigan observes, a still more accurate means of diagnosis in the ordinary achromatic microscope for medical purposes, with a magnifying power of 300 diameters, which furnishes a means of instantaneously and with certainty distinguishing the disease under consideration. Three drawings were made at the moment of examination by the microscope, by his friend and clinical clerk, resident at the hospital, Mr. Rambaut, the first being a representation of the pus-globules in recent matter taken from a case of impetigo, and presenting the same appearance as those of ordinary pus.

The second represents a portion of the dried scab of impetigo, which being moistened with a little water, and placed under the microscope, exhibited the appearance of an amorphous mass, the portions comprising it being somewhat like the scabs of the epidermis or mucous membrane. The third drawing exhibits the appearances observed in a portion of the moistened scab of genuine porrigo, appearances so closely resembling those of a cryptogamic plant, that any one who has seen them, Dr. Corrigan observes, cannot hesitate to consider porrigo as consisting in the growth of fungi in the human skin. To Dr. Bennet, of Edinburgh, who has published perfect drawings of this parasitical vegetable, in a paper contained among the Transactions of the Edinburgh Royal Society, he states that he is indebted for the first demonstration of this singular fact, the discovery itself being due to Ehrenberg, of Vienna.

Dr. Bennet has discovered the cryptogamic plant of porrigo in the common house mouse; and this, Dr. Corrigan observes, may have more to do with the peculiar odor of the disease than might at present be suspected, and may serve to illustrate some intimate connection between man and the lower animals in the propagation of disease. The nature of porrigo, he adds, may now, perhaps, serve to explain its peculiarity of growth accumulating rapidly upon the surface, independent of any secretion of pus to form the mass of the scabs; the growth of a single favus of porrigo, too, if observed, will be seen to take place at the circumference, its height being acquired at the edges, all round the circumference, while it remains hollow in the centre, this being in accordance with what is observed in many cryptogamous plants, which, having exhausted their pabulum in the centre, continue to grow out in a circle. Dr. Corrigan concludes by observing that the disease, as he has always seen it, is chronic, and is not confined exclusively to the scalp, having observed it now and then on almost all parts of the body, in some cases consisting of only two or three favi on the back of the neck.

He does not believe it to be contagious; and is strengthened in this opinion by the failure of attempts made by Bennet and others to inoculate with the disease; its non-contagious nature, he observes, contrasts strongly with impetigo, which spreads so rapidly among children.\*

As evidence of the rarity of the disease in Ireland, he observes that all the cases he has ever seen would hardly amount to thirty, an additional contrast to impetigo, eczema, pityriasis, &c., of the scalp, which are so common. He has never seen it in private practice, or in respectable life, and suggests the possibility of its being propagated from

\* Dr. Bennet has since succeeded in inoculating from favous pustules.—Ed.

an inferior animal, like cow-pox, the odor of the mouse (a well-marked diagnostic sign) being so strong in the disease as to strengthen the supposition of its being derived from that animal, on which Dr. Bennet has discovered the same parasitic plant as in porrigo; poverty or sickness reducing the living body to a state fit to constitute a nidus for a parasitic plant.

Reflecting on the nature of the disease suggested to Dr. Corrigan the employment of an ointment composed of five or ten grains of oxymuriate of mercury to an ounce of ungt. cetacei, a remedy on which he places much reliance; in the latter proportion it sometimes gives pain. A small portion of the ointment is rubbed on the affected part every day, and it has not produced salivation in any instance. The author records three cases in which the remedy was attended with marked success, but in one only, he observes, has the relief experienced lasted sufficiently long to admit of its being considered a cure; the disease has again and again disappeared after having been repeatedly subjected to various modes of treatment by Dr. Corrigan, and by gentlemen at other hospitals, but continued to reappear until put under the use of the foregoing ointment, in February last, since when the patient, who lives in the neighborhood of Whitworth Hospital, has been entirely free from the disease.

ART. 29.—*On Mercurial Frictions in Small-pox.* By M. GOBLIN.

(*Revue Médicale et Encyclopédie Méd.*, Juillet, 1845)

Mercurial frictions were used for the first time by the author in the year 1832. "I commenced," he observes, "at first by anointing only the eyelids, the nostrils and the angles of the mouth. Soon after this operation, the pustules, which were more or less advanced towards suppuration, appeared to be arrested in their progress, and speedily dried up and desquamated. This action was so decided, that in subjects in whom the disease was of the confluent type, the eyelids did not participate in the erysipelatous tumefaction which existed in the other parts of the face."

Encouraged by these results, the author, in succeeding cases, carried his inunction to a greater extent, including the whole face and neck. The effects were equally satisfactory. The frictions are commenced as soon as the pustules are developed, the quantity of the ointment being proportioned to the confluence of the eruption. They are to be repeated two or three times a day, and persisted in until desquamation commences.

According to M. Goblin, the action of the mercury is strictly local. The success of the plan is confirmed by the testimony of M. Dufresne, who was sent by the Prefect of the Seine, to investigate the epidemic in which M. Goblin acquired his experience of the advantage of the remedy.

[Dr. Corrigan, in his *Lectures on Small-pox*, published in the "Medical Times," recommends the application of the emplastr. plumbi melted with almond oil, and spread over the face with a camel's hair brush. The compound is to be allowed to dry, and to remain until it is detached by desquamation. Rilliet and Barthez (*Traité Clinique des Maladies des Enfants*) make use of a pomade consisting of 24 parts of mercurial ointment, 10 parts of yellow wax, and 6 parts of black pitch. Both of these applications are stated by their respective partisans to be effectual in preventing the unseemly scars of the small-pox.]

ART. 30.—*Case of Lupus cured by insertion of a Seton.* By DR. HENRY KENNEDY.

(*Dublin Journal of Medical Science*, Sept., 1845.)

In the month of March, 1843, a servant applied at St. Thomas's Dispensary for relief. She was laboring under lupus, not only affecting the nose, but spreading over the greater part of the face. She was about thirty years of age, and was otherwise healthy. She stated it had commenced on one side of the nose, from which spot it had gradually spread, and that it had existed upwards of two years. As it usually is, the disease was least marked on and about the nose; in fact, on the cheeks and forehead it was of a different character. It might be described here as being of the nature of tubercular lupus; the entire skin was thickened and red, and had lost its supple feel; besides this, a number of hard tubercles could be felt almost in every direction: and

though no ulceration had taken place over them, still, in several places there was an appearance of ugly cicatrices, disfiguring the entire countenance. She was directed a course of Plummer's pill, and to bathe the face assiduously with lukewarm water. This plan was pursued steadily for some time, but without any benefit, and she was then directed to take the solution known under the name of Donovan's solution. This also was persevered in, and continued till her health began to suffer. It was then given up, and an issue was put in the arm, the bathing being directed to be continued. In the course of a month, a manifest improvement had taken place; the skin generally had assumed a more healthy appearance, and the tubercles had manifestly lessened in size. It is enough to add, that the issue was kept in seven months, when it was discontinued, all traces of the disease having disappeared. As a matter of precaution, however, she was again directed another course of the solution. She has since then continued quite free of the disease.

The use of the issue in this instance was not my own idea, but I am unable to state where I learned it; nor, from want of time, have I been able to ascertain whether it be a plan of treatment recommended in any of the standard works on diseases of the skin. I think it may be asserted, however, that it is not one in common use in such cases. The case detailed appears to me a very strong one in proof of the efficacy of this particular line of treatment. Every one knows the extreme obstinacy of many diseases of the skin, and particularly those which appear on the head and face. Some forms of porrigo, as also that form of ulceration which has been described by Dr. Jacob, afford but too well-marked examples of this. The number of young females, too, which one sees disfigured by the more common form of lupus is very considerable. In all these cases I cannot help thinking that an issue would form a most important part of the treatment; further experience, however, can only determine the point.

ART. 31.—*On the Treatment of Scabies.* Every practitioner has had occasion to lament that the best remedy for this disease is one of so disgusting a nature as is the sulphur ointment. The profession, therefore, will be glad to learn from the following communication from Mr. Stiff, that the sulphur may be dispensed with, and that the essential portion of the compound is the adipose matter. Mr. Stiff states, that during the last six months he has frequently tested the action of sulphur in scabies, and considers that it may be cured without it. The truth of this assertion is rendered more evident, he thinks, by looking into the nature of the disease, and by examining the anatomy of the animal. The *acarus scabiei* belongs to a class of insects which breathe by the tracheæ, and its respiration is therefore suspended by smearing its body with any oleaginous substance. It is in this manner, then, the sulphur ointment acts, according to the author, and not in virtue of any specific action of the sulphur. In proof of this, he affirms that he has cured more than forty cases by inunction with simple lard, unaided by any other treatment. The average duration of treatment was only a week.—*Medical Times*, July 26, 1845.

ART. 32.—*Treatment of Scabies by the Veratria Alba.* The various ointments of sulphur used in scabies have these objections, that although they cure the disease, they are exceedingly offensive to the patient and his friends; and, moreover, in irritable subjects, frequently give rise to eczematous eruptions, which are even more troublesome than the original disease. For these reasons the following recipe is recommended in a recent number of the "*Annales de Thérapeutique*:"

"Powdered root of white hellebore    60 grammes = 3 xv  
Black soap                                    25—30 grammes = 3 vii  
Hot water sufficient to make an ointment.

"All parts of the body affected with the eruption are to be rubbed once a day with this compound; after a few frictions, the patient complains of heat in parts which have been exposed to the ointment, and the itching of the scabies has ceased. One or two common warm baths are now necessary. If fresh vesicles should show themselves they are to be similarly attended to."—*Annales de Thérapeutique*.

ART. 33.—*Lotions in Porrigo decalvans and other diseases causing falling off of the hair.* Mr. Wilson advises that persons with short hair should immerse the head in cold water morning and night, and after drying and well brushing it to moisten the

roots with one of the following lotions. In females with long hair the cold washing may be dispensed with. The lotions are three in number :

- No. 1. Vinegar of cantharides, half an ounce.  
Eau de Cologne, one ounce.  
Rose water, one ounce. Mix.
2. Eau de Cologne, two ounces.  
Tincture of cantharides, half an ounce.  
Oil of nutmegs, half a drachm.  
Oil of lavender, ten drops. Mix.
3. Mezereon bark, one ounce.  
Horseradish root, one ounce.  
Boiling distilled vinegar, half a pint.

The infusion to stand for a week and then to be strained. If the hair becomes dry and harsh after using these lotions, a small quantity of pomatum may be rubbed in.

*Practical Treatise on Healthy Skin, &c.* P. 345.

ART. 34.—*Case of Molluscum.* The following case is described under this head by Dr. NERET, of the Hôpital St. Charles of Nancy. Nicolas Lallemand, an infirm old man, 73 years of age, was admitted into the hospital on the 27th of February, 1841, with oedema of the legs. About this time tubercles were observed to develop themselves over different parts of the body. They appeared in great numbers on the abdomen, back, thighs, and arms ; in smaller numbers on the legs and forearms ; a few on the neck, and one only on the face, near the external angle of the left eye ; none on the feet, hands, or hairy scalp.

Their appearance was preceded by a red spot ; their form was circular or oval ; they rose and extended in size gradually ; their base was flattened ; some acquired the volume of a pea only, some that of a filbert, and others that of half an egg divided longitudinally, which they resembled in shape. Their surface was convex ; they had a reddish livid tint, were hard to the touch, and painful on pressure. On incision they bled, and their tissue appeared homogeneous, cellular, and reddish. Their bases were surrounded with a red areola from one to two centimetres wide, according to their size.

When fully developed, the largest ulcerated on the surface, suppurated, and then became covered with a black crust, which dried and fell off. The body of the tubercle itself dried, shrivelled, became black, diminished gradually in volume, and ultimately disappeared, leaving a copper-colored stain resembling venereal spots, which subsequently entirely disappeared. Suppuration of the smaller tubercles was scarcely obvious ; they became covered with a black crust, and gradually disappeared ; some shrunk and disappeared without any trace of suppuration. Two months for the most part elapsed from their first appearance to the total disappearance of the copper-colored spots which succeeded them.

The disease was at its height in April, and a month later the number of tubercles was greatly diminished. The patient was throughout in good health. Inoculation of the purulent matter in a healthy part of the thigh produced no effect.

In June the patient was attacked with erysipelas attended with diarrhoea and other unfavorable symptoms. The inguinal glands in the right groin swelled, but the tubercular disease disappeared. On the 15th of August a very few tubercles remained in the thighs and back. The patient then became the subject of hemorrhagic attacks. Spots running together were remarked on the legs, resembling purpura hemorrhagica, the epidermis was detached in large scales from the whole surface of the body, and the patient sank on the 28th of August.

On post-mortem examination, one of the few remaining tubercles on the thigh was cut through, and its base found resting on the cellular tissue which covered the aponeurosis, and its parenchyma was in a state of decomposition. The upper part of the lungs, particularly on the right side, which was puckered, contained black concretions, resembling *melanotic matter*. There were three serous cysts, containing a white, limpid liquid, on the surface of the right kidney ; both kidneys were hyperæmic, and the urine in the bladder was coagulable by heat and nitric acid.

The patient stated that he had never contracted any venereal complaint.

A thorough investigation of those cases which practitioners, for want of a better nosological position, are accustomed to refer to the genus *molluscum*, would repay the



labor of one of our first pathologists. We beg to refer those who are interested in the subject to a paper in the 7th volume of the "*Medico-Chirurgical Transactions*," p. 227. *Archives G n rales de M decine*. Ao t, 1845.

## SECT. VIII. THERAPEUTICS AND ACTION OF MEDICINES.

ART. 35.—*On the Therapeutical value of Nitrate of Potash.* By M. SELADE.

(*Archives de la M decine Belge*, Mars, 1845.)

[The following observations form part of a memoir, entitled "General Considerations on the Mode of Action of Medicinal and Poisonous Substances," and appear to exhibit the antiphlogistic virtue of the nitrate of potash in a favorable point of view. The author commences the subject by an historical resumé of the employment of this medicine, which is not of sufficient interest for repetition; he then enters upon his own experience of its power in various diseases. His observations are to this effect:— "I have exhibited the nitrate of potash in inflammatory affection seventy-two times, and after a scrupulous investigation of its mode of action, I have no hesitation in saying that it is one of the most powerful antiphlogistics which we possess. The majority of authors, in speaking of this medicine, have always confounded its direct action upon the living economy with those phenomena which are the result of this mode of action; and they have, moreover, failed to discriminate between its primary and secondary effects. I shall, in the first place, mention the more certain effects of the medicine, and then proceed to notice those which have been less clearly appreciated.

"The first and most constant symptoms produced by the ingestion of the nitrate of potash in inflammatory diseases are a diminution of the strength and frequency of the pulse, together with a subsidence of the exalted temperature of the body. These effects, except in very severe cases, are perceptible in the space of twenty-four hours from the time at which the medicine is exhibited. The secondary effects are declared by an increased secretion from the kidneys and skin; of these the kidneys are the first to be influenced. The mode in which the nitrate of potash acts is, in my opinion, directly upon the blood, by diminishing the quantity of fibrin, at the same time that it increases the quantity of serum. Experience has proved that in the hyper mie the fibrin is constantly increased in quantity, and that it at the same time acquires new properties; the blood becoming more stimulating, and eventually producing great disturbance in the various bodily functions. By the use of this medicine this state of things is rectified; the blood becomes less exciting, and less disposed to coagulate, and a curative change takes place, in virtue of which the function of the diseased organ becomes re-established.

"The dose of the nitrate of potash must necessarily vary according to the age and other individual circumstances of the patient. In acute inflammations in the adult, I generally commence with half an ounce in repeated doses during the twenty-four hours, increasing it to six drachms on the next day, and subsequently to one ounce. In sub-acute inflammations a smaller quantity will be sufficient. The dangers which are attributed to the employment of this medicine have been much exaggerated; when exhibited in progressively increasing doses, I have never seen any ill effects."

[The author of this memoir appends several cases in which no other treatment than the exhibition of the nitrate of potash was pursued. Among these are two of acute pneumonia, one of acute rheumatism, one of menorrhagia, and one of blenorrhagia. In each of these the medicine was completely successful in the doses above mentioned. Precisely similar views of the action of nitre are taken by Zimmerman in his work on pseudo-plastic processes.\*]

ART. 36.—*On the Therapeutical Action of the Aconitum Napellus.*

By A. FLEMING, M.D., President of Royal Medical Society of Edinburgh.

The physiological and therapeutic action of the aconitum napellus or monkshood

\* Zur Analysis und Synthesis der pseudo-plastischen Prozesse, &c. Berlin, 1844.

forms the subject of a most admirable inaugural thesis, written for the degree of M.D. in the University of Edinburgh.\* Dr. Fleming's work is full of interest in every point of view, but as it will be noticed at length in our Report on *Materia Medica*, we shall confine ourselves in the present place to a condensed account of the therapeutical action of the medicine. It may be stated briefly, that its medicinal action, as stated by the author, is in the first place *anodyne*, secondly, it is *anti-neuralgic*, differing in this case from opium, in that it not only decreases the sensibility of the affected nerve for the time being, but removes the morbid condition of the nerves. It is also *calmative* in inordinate excitability, and *anti-spasmodic*. As an agent capable of depressing vascular action it possesses considerable power, and is said by the author to be superior to venesection, mercury, and purging in this respect, that it may be continued for weeks without producing any unpleasant effects. The *diuretic* properties of the drug are not decided, but it possesses undoubted powers as a *deobstruent*, causing the absorption of fluid effused into the joints in synovial rheumatism, and promoting, according to Störck and others, the discussion of glandular swellings.

The diseases in which aconite is said by Dr. Fleming to be useful are in various forms of neuralgia; in the general pains of fever; in diseases of the heart and great vessels, and in rheumatism.

**I. Neuralgia.** Aconite has been used in neuralgia by Pereira, Jahn, Hufeland, and others, with success, but has failed in the hands of Dr. Copland and Dr. Anthony Todd Thompson. Pereira, Copland, Watson, Skey, and others, are of the opinion that its external application is more likely to be attended with success in neuralgia, than its internal administration; while Hufeland, Busse, and Tealier prefer the latter: the author remarks, that in this respect our choice must be guided by the nature and cause of the affection as far as they can be ascertained. Should the disease be inflammatory, or be traceable to sympathetic irritation, the internal use of the remedy is the more likely to be beneficial; if, on the other hand, it seems to arise from some local irritation in the nerve, or is merely functional, its topical application may probably be sufficient. Its use should be preceded and accompanied by a due attention to the state of the secretions.

**Hemicrania.** In this form of neuralgia the author has found the external application of the tincture very effectual, both where the pain affects a circumscribed portion of the head, and where it extends along the course of a nerve.

**Tic Douloureux.** The aconite was first recommended in this affection by Dr. Turnbull; and it has since been used with benefit by Dr. Roots and Sigmond. M. Roche found the internal use of the extract very effectual. The author has tried the remedy in four cases. In one in which the super-maxillary nerve had been affected for seven months, a cure was accomplished in thirteen days. In a second case of great severity, nine days were sufficient. The third was a case of frontal neuralgia: the tincture was rubbed on the painful spot three times a day with decided benefit. In the fourth case only temporary relief was obtained.

**In Toothache.** The author advises that the gum should be rubbed with the tincture, or that it should be introduced on lint, if a cavity exist. It was tried in forty cases and gave immediate relief in all but seven.

**Neuralgia of the thoracic and intercostal nerves.** *Spinal irritation.* Dr. Fleming has found the local application of the tincture extremely successful, in the anomalous neuralgic pains occurring in females about the seventh, eighth, and ninth ribs of the left side, and also in spinal tenderness either coexisting with, or independent of these pains.

**Neuralgia of the extremities.** Under this head the author relates a case of aural neuralgia, one of neuralgia of the feet, one of a stump after amputation, and one of the right hand, which were cured by the internal use of the tincture. In twelve cases of sciatica treated in the same manner, seven complete and two temporary cures were obtained. As far as the author's experience goes, the aconite is most serviceable in those cases of sciatica which appear to depend upon a congested or inflammatory condition of the nerve.

In six cases of *gastralgia* Dr. Fleming used the following prescription with immediate relief:—

\* An Inquiry into the physiological and medicinal properties of the *Aconitum Napellus*. London, 1845, p. 100.

R	Tinct. aconiti . . . . .	3 j
	Sodæ carb. . . . .	3 jss
	Magnes. sulphat. . . . .	3 jss
	Aquæ . . . . .	5 vj. M. ft.

A tablespoonful to be taken when the pain is urgent.

In *Cephalalgia* the aconite has been tried by the author fifteen times, and in ten cases with complete success. Of these three were cases of nervous, four of plethoric, and three of rheumatic headache. Relief was usually experienced after the first dose, and a complete cure effected on the second or third day. [Similar benefit has been derived by Dr. Burgess (*Edin. Med. and Surg. Journal*, 1840, p. 95) and by Mr. Radley (*Lancet*, 1836, vol. ii., p. 925.)]

II. *Diseases of the heart and aneurism of the large vessels.* In all cases in which the indication is to diminish the heart's action, aconite is stated by the author to be a most valuable remedy. In *functional* derangement, it will be often found sufficient to obtain a complete cure, if conjoined to an appropriate regimen; so also in an hypertrophy, and those forms of organic disease in which it is advisable to reduce the action of the heart. In such cases the effects of aconite are superior to those of digitalis, for the reason that the former is from the first a direct sedative, while the latter is alleged to be preceded by a stimulant action.

In *Aneurisms*, accompanied with neuralgic pains, aconite produces a marked alleviation of the patient's suffering, partly in virtue of its power as an anodyne, partly in consequence of its sedative effect upon the circulation. [Dr. Furnival, in his work on *Diseases of the Heart*, likewise speaks in favorable terms of aconite. Vide 'Half-yearly Abstract,' vol. I., p., 213.]

III. *Acute rheumatism.* Aconite was first recommended in this disease by Störck, and has since been employed with much success by Gesner, Gmelin, Murray, and more recently by Drs. Lombard and Sigmond. The author has annexed a table, in which he surveys the results of cases treated by himself and others. It appears from this table that the aconite treatment possesses great advantages over the ordinary methods, as it has for the average duration of its employment no more than five or six days, the duration by ordinary means being from a fortnight to three weeks. In three instances a cure was effected in two days, in one in three, and in six in four days. On the contrary, the lowest average of the duration of the treatment of acute rheumatism, as furnished by Drs. Hope and Corrigan, are a week according to the first named writer, and nine days according to the latter. The aconite acts very speedily, subduing the rheumatic pains sometimes by a single dose; while there are few cases in which decided relief is not obtained in a few hours. The table shows likewise that heart complication occurred only in two cases out of twenty-two [this is certainly below the average, if we are to believe Dr. Latham, vide Art. 24], and in these the cardiac disease had been detected previous to the exhibition of the aconite. "Thus," observes the author, "aconite not only effects a cure in a shorter period than any other mode of treatment, but appears to possess the great negative advantage of not increasing the liability to extension of the disease to the membranes of the heart."

Aconite seems equally useful in rheumatic fever, and in acute synovial rheumatism. In the latter disease Dr. Lombard has found it contribute powerfully to the removal of the fluid effused into the joints. Friction with the tincture assists this latter object to a material extent. Dr. Lombard considers aconite to be a specific in acute rheumatism; the author, however, believes its good effects to depend upon its power as a sedative of the nervous and vascular systems; in other words, to its properties as an anodyne and antiphlogistic.

*Chronic rheumatism.* The aconite may be used both externally and internally in this affection. The author, however, prefers its internal administration in the more active form of the complaint, or that which is, more properly speaking, a mild form of the acute disease. In the passive chronic rheumatism, he recommends its external application in the form of tincture. In lumbago its powers are stated to be of the highest order; decided relief frequently being obtained in the space of an hour.

The author has likewise exhibited the aconite with great advantage in erysipelas, in carcinoma as an anodyne, in pruritus, and in gout.

*Mode of exhibition.* The best method of employing aconite is in the form of tincture made as follows:—"Take of the root of the *A. napellus*, well dried and pounded, sixteen ounces troy; rectified spirit sixteen fluid ounces; macerate four days, strain, and add spirit till twenty-four ounces are obtained.

This tincture is beautifully transparent and of a slightly bitter taste.

Dose as an *anodyne*, *antineuralgic* and *calmative*,  $\mathfrak{m}$  v, three times a day, increased daily by  $\mathfrak{m}$  j per dose. As an *antiphlogistic*  $\mathfrak{m}$  v, repeated four hours after the first dose. In order to sustain the sedative effects thus produced,  $\mathfrak{m}$  iiss are to be given every three or four hours. [The author, it must be stated, cautions the practitioner that in exhibiting the drug after this plan, the patient ought to be seen and his pulse examined before each dose; if this cannot be done, he advises that it should be given as in the anodyne method above mentioned.]

The best method of administering the drug in diseases of the heart is to give it in smaller doses than those frequently recommended, but more frequently repeated. Sickness may be avoided by an effervescing draught taken after each dose.

For external use, the author prefers the tincture rubbed over the affected part, but also employs an ointment, as follows:—

$\mathfrak{R}$  Aconitinae, grs. xvj.

Sp. rectific.  $\mathfrak{m}$ . xvj. Tere optime.

Dein. adde axungiae,  $\mathfrak{m}$ . j. ut ft. unguent.

The author in the last place cautions us not to employ either preparation when there is any absorption of the skin. (Pp. 54-83.)

#### ART. 37.—On the Remedial Efficacy of Ox-gall.

By R. H. ALLNATT, M.D., A.M., F.S.A.

*Lancet*, June 7, 1845.

Habitual costiveness (observes Dr. A.) frequently arises from a deficiency of bile, which appears to act as the natural stimulus to the peristaltic action of the bowels. The motions in such cases are clay-colored. The more fluid parts become absorbed, and hardened masses become impacted in the lower bowel, thus adding a mechanical obstacle to the already existing cause of constipation. He remarks, that if this mass of inspissated fecal matter be subjected to the action of ox-gall, even out of the body, it becomes broken down into a fluid pulp, and, however pale in color they may have been previous to the admixture, they speedily assume a natural appearance. The same effect follows the injection of ox-gall into the bowels, as is shown in the following case:

A. R., a young lady, æt. 20, suffered from obstinate constipation, which had persisted upwards of a fortnight. She had been treated previously to visiting me, by drastic purgatives, which produced pain and vomiting, and a feeling of general uneasiness, combined with ineffectual attempts to pass an evacuation. The lower bowels were obviously obstructed by impacted scybala. Injections of turpentine were first administered without relief, when recourse was had to two ounces of ox-gall in half a pint of thin gruel used in the same manner. The exterior parts of the hardened masses became immediately dissolved, and in the course of ten or fifteen minutes the whole was ejected, to the instantaneous relief of the pre-existing symptoms.

Another case, treated by the internal use of the gall, was followed by equally happy results:

W. P., a gentleman of active habits, was, after a course of mercury and opium, obstinately costive. A feeling of sickness was perpetually present, vomiting occurred on rising in the morning, and a total loss of appetite ensued. He had taken strong and irritating doses of croton oil and colocynth, attended with aggravation of the symptoms. This was the state of things when he applied to me. He was ordered five grains of the inspissated ox-gall three times a day.

On the second morning a copious motion was produced. [A third and equally satisfactory case is next adduced, after which the author alludes in the following manner to the physiology of the bile:]

Independently, however, of these obvious and perhaps mechanical effects, the natural bile is a secretion which is designed to fulfil other important duties in the economy,

for it has been proved by Berzelius, Schwann, and others, that it is not merely, as was supposed, an excrementitious fluid, intended for no other purpose than that of removing effete matters from the blood. In one of the experiments of the last-mentioned physiologist, he tied the ductus communis choledochus of a living animal, and established a fistulous opening by means of which the bile escaped externally. His conclusions are as follows: 1. That when bile does not get into the bowels, its absence is generally perceptible about the third day, by a marked diminution of weight. And 2. That unless the channel for the conveyance of bile to the duodenum be re-established, symptoms of deficient nutrition, wasting, debility, &c., ensue, and death is the ultimate result.\*

I regard this last as a highly important pathological fact, for how frequently do we meet with analogous instances in practice; cases of marasmus, in which, without any appreciable organic lesion, there is a gradual decline of the physical and vital energies, direct evidences in fact of deficient nutrition, involving the integrity of all the functions of the body, and leading to a fatal termination? There is, however, a symptom almost invariably present, and one by which our practice is in a measure guided, namely, inaction of the liver, which gives rise to obstinate constipation, clay-colored stools, and the whole train of effects which follow an obstruction of the hepatic secretion. A case of this kind fell under my observation a few years ago, which made a strong impression upon my mind, owing to the total inefficiency of all the means adopted. After a severe attack of influenza, the patient sunk into a cachectic state, the liver was uniformly torpid, and nutrition in consequence appeared totally suspended.

Chlorosis is another disorder in which there is invariably a confined state of the bowels, arising from a paucity of bile; and a series of morbid changes takes place, indicative of deficient nutrition. In these cases, if we could supply the pabulum which nature has denied, and which has been proved to be of such essential service in the economy of her operations, we should be fulfilling the most direct indication and the most rational mode of treatment. At any rate, in the absence of efficient means afforded by our present store of materials, I regard the ox-gall as a valuable resource, worthy of a patient and extended trial.

In all cases of incipient constipation, administered in the form of enema or pills, the ox-gall is a remedy of undoubted efficacy; and even in protracted cases, where hope has almost departed, but where the evidence of strangulation is not unequivocal, it should never be omitted by the practitioner. In habitual constipation, accompanied by indigestion, clay-colored stools, and a feeling of oppression after meals, it acts almost with specific certainty. When, however, the liver begins to assume its healthy action, its employment should be discontinued, as it will then produce all the symptoms of regurgitation of bile into the stomach. This state will be readily recognized by the practitioner as a favorable omen of returning power.

There is one other point of considerable importance connected with the present subject, which is, the destruction of the narcotizing property of opium, when combined with ox-gall; the constipating effect of opium is principally produced by its action upon the liver, the secretion of which it arrests, and renders insufficient for the due stimulation of the alimentary canal. In many cases this is a serious drawback to the exhibition of opium, for we often require its sedative, when its constipating effects would be injurious. Five or eight grains of ox-gall will neutralize this effect of one grain of opium without destroying its sedative power."

[As many of our readers may be unacquainted with the method of preparing the inspissated ox-gall, we here append some directions as given by Dr. Hunter Lane, and of the efficacy of which we can speak practically, having given it extensively when first recommended by Dr. Clay, and we may add with an equal reliance upon its powers. Dr. Lane states:—"That great care is to be taken in selecting the gall-bladders, which should be from young oxen. When healthy, ox-gall is a transparent fluid of a bright grass-green color, of a viscid and equal consistence, strong animal odor, and bitter alkaline taste. Bile of this description taken from about a dozen bladders should be poured into a deep earthen vessel, and allowed to rest for twenty-four hours; the supernatant liquid should then be poured off into a shallow dish, and set on an oven at a temperature not exceeding 100, until it be reduced to the consistence of an extract." Dr. Lane suggests, that as its deliquescent nature prevents its being kept

\* Vide Half-yearly Abstract, Vol. I., pp. 256 and 333.—Ed.

in a convenient consistence even when made into pills, that it should be *desiccated* and preserved for use in the form of powder in well stoppered bottles. (*Lancet*, July 5, 1845.)

The deliquescence complained of is denied by Dr. Allnatt (*Med. Gazette*, July 11), and, as we think, with reason; we can at all events vouch for the perfect condition at the present time of a specimen of the inspissated gall made two years ago.]

ART. 38.—*On the endemic use of Morphia in painful permanent Swelling of the Joints, with Contraction.* By A. TODD THOMPSON, M.D., F.L.S.

(*London and Edinburgh Monthly Journal*, Oct., 1845.)

[Dr. Thompson introduces the subject of his present communication by the statement that the disease which he wishes to illustrate is different from that which was first described by Dr. Haygarth, under the designation of "nodosity of the joints." The following is his description of the disease to which he alludes:]

"The disease, which is the subject of this communication, does not display itself at any particular period of life, nor is it confined to either sex. I have never seen it, however, under puberty. It appears in every instance to be the sequel of repeated attacks of acute rheumatism; and has a greater affinity to inflammation of the synovial membranes so graphically described by Sir. B. Brodie, than to any other disease with which I am acquainted. It sometimes appears in many joints at the same time, but is most commonly confined to the knee joints. As it usually follows soon after the last of the attacks of rheumatism which have preceded it, the pain of the joints is referred to a recurrence of the rheumatic inflammation, although it is commonly confined to the inner side of the knee, and is only severe when the joint is moved. In a few days afterwards, however, the joint begins to swell, and the enlargement is accompanied with contraction of the flexor muscles, so that the limb assumes a semiflexed position, and cannot be stretched out without considerable pain. There seldom appears to be much effusion of lymph, and the evidence of the presence of fluid in the joint diminishes as the swelling progresses, and ultimately it seems as if the enlargement depended altogether upon the deposition of solid matter. At this period the joint loses its mobility, and every attempt to extend the limb is productive of intense suffering to the patient. The affection is attended with little fever or constitutional derangement, excepting when the inflammation assumes the acute character. I am inclined to think that the inflammation is usually of a chronic character, and only occasionally becomes acute from extraneous causes. I am fully aware of the difficulty of distinguishing between acute and chronic inflammation, but in the diseases under consideration I have been guided by the degree of pain in the affected part, and in the febrile action which accompanies its increase, in determining the existence of acute inflammation. Under such circumstances, also, when blood has been abstracted, it has always displayed the buffy coat. As the pain is greatest in the night, the patient is often worn out for want of sleep."

[The exact pathological condition of the joints in the disease above described does not appear to be satisfactorily made out, nor does Dr. Thompson speak from actual inspection of a diseased joint, when he states that he "has no doubt that the inflammation is seated in the synovial membrane, which becomes thickened, and thus enlarges the joint and renders it rigid."]

"The remedial means which have been usually employed in inflammation of the synovial membranes of joints, viz. colchicum, opium, calomel, and antimonial preparations, remedies that have a powerful salutary influence in acute rheumatism, and in gout, have failed in my hands in affording either much relief from pain or in aiding topical means, such as repeated cupping, blistering, and moxas, to restore the action of the joint in this disease. Under such treatment, the pain has been abated for an interval, but it has generally returned when an effort has been made to bear upon and use the limb, or when the general health has been in the smallest degree impaired. Preserving the limb in complete repose, seemed only to favor the contraction, to render the immobility of the joint permanent, and to impair the general health. Douching, shampooing and friction, with fomentations, have been productive of no benefit.

"Reflecting upon the many disappointments that had followed my treatment of these cases, I was induced to think that much of the chronic inflammation was kept up by the

pain, and that if that could be reduced, and at the same time counter-irritation be maintained, more permanent relief might be obtained than had hitherto been the case. For this purpose I resolved to try the topical effect of *morphine*, the beneficial effects of which I had had several opportunities of witnessing in cases of *tic douloureux*. I blistered the affected joints, and sprinkled the denuded surface with a grain or a grain and a half of the hydrochlorate of morphia night and morning. The application caused a sensation of burning on the part, which, however, soon subsided, and left the joint in a state of comparative ease, and after a few days it was susceptible of a small degree of motion without pain, so that in some cases the patient was capable of extending the limb freely after the tenth or twelfth application. In many instances a particular eruption attends the application of the salts of morphia, occasionally commencing at a distance from the affected part, and gradually extending over the greater part of the body. In such instances the disease has yielded more rapidly than when no eruption appeared. General remedies were sometimes employed conjointly with the topical means, but these were necessary only when the general health required correction."

[The author adduces seven cases in which the medication he recommends appears to have been eminently successful, and concludes his paper with these general deductions] :—

"1. That in painful, swollen, and contracted joints, depending upon rheumatism or other causes, the topical application of hydrochlorate or acetate of morphine, to a blistered surface, on the affected joint, is capable of reducing the swelling, abating the pain, and restoring the motion of the joints.

"2. That these salts seem to produce their beneficial effects by reducing the sensibility of the nerves of the joint, and favoring absorption by their counter-irritant influence.

"3. That they do not act as general narcotics until the joints are relieved.

"4. That they frequently excite a pustular eruption over the body; but this disappears spontaneously, soon after the use of the topical application is discontinued."

ART. 39.—*Endermic Use of Tobacco*. By WM. BECK DIVER, M.D., of Cincinnati.—The use of tobacco as a remedial agent has received less attention from the profession than it deserves. Its powerful agency has been satisfactorily tested in cases of strangulated hernia, ileus, and spasmodic stricture of the urethra; but the dangerous consequences which have been reported as resulting from its use in the usual form by the mouth and by the rectum, induced me some years ago to try it endermically; and the results, which were entirely satisfactory, were published in the *Lancet*, vol. ii., page 420.

Subsequent trials of this powerful antispasmodic lead me to repose still greater confidence in it, and induce me strongly to recommend it in cases where the ordinary remedies of this class fail or are inadmissible.

The following case will illustrate the advantages of this method in tetanic rigidity of the muscles.

W. H., of St. Charles, Mo., received, about seven years ago, a wound from an adze, which completely divided the rectus femoris muscle immediately above the patella. In order to procure healing by "the first intention," his physician, very properly, placed the limb in the extended position; his object was attained, but subsequent inflammation and deposition in the knee-joint produced ankylosis, and the most unyielding rigidity of the limb. Up to the time, June, 1844, when the patient was submitted to my care, he had travelled about with great difficulty, and derived no advantage from medical treatment. He was extremely anxious to regain, if possible, the use of his knee-joint, and therefore cheerfully submitted to an operation for this purpose. In the presence of several physicians of this city, I divided the rectus femoris transversely in nearly the direction of the original wound; this was effected with a very small knife by a subcutaneous incision; scarcely a drop of blood was effused; the ends of the divided muscle widely retracted, and a very slight degree of flexion could be produced by the application of force. The next day, 13th June, I placed the limb in Roe's apparatus for compound fracture of the leg, and applied the screw, by which a still greater degree of flexion was produced. For several weeks flexion and extension was kept up, until a good degree of motion was established in the knee-joint. Beyond a certain point, however, the antagonist muscles refused to yield, and upon applying a greater degree of force with the screw, a severe tetanic

rigidity was set up in the extensors which threatened to frustrate our object. To relieve this I directed the patient, who was unaccustomed to the use of tobacco, to smoke freely the strongest that could be procured. While under the influence of this form of the remedy, the muscles became relaxed, and a still further flexion of the knee was effected. The following ointment was rubbed into the groins and over the knee:

℞. Iodin. gr. xij.  
Potassæ hydriod. ʒ iv.  
Olei nicotianæ, gtt. l.  
Adipis præparat. 3 ij. Misco.

Under a persevering use of this formula, and continued application of the screw producing flexion and extension, I succeeded in reducing the tetanic rigidity of the muscles and tendons; the motion of the joint was in a good degree restored, and the patient enabled to ride on horseback with perfect satisfaction. His health being slightly impaired by the confinement necessary, he was advised to visit Kentucky, where he rode and walked with more ease and pleasure than he had enjoyed for many years before.

I have succeeded in relieving a violent cerebral and gastric irritation by the powerful antiphlogistic properties of this agent; and the results of my experience in the endemic use of tobacco are such as to lead me to prefer it in cases where antiphlogistic means are requisite, but where the vital powers are too much depressed to admit of venesection, or the internal use of antimonials. The application of tobacco cataplasm to the epigastrium has, in my practice, removed violent colic resulting from spasmodic stricture of a portion of the intestinal tube, and copious evacuations have been produced by the same method where the ordinary purgatives were inadmissible, or when delay was dangerous. A great advantage in this method is that the remedy is more immediately under the control of the practitioner than when administered internally.

*Philadelph. Med. Exam.*, Sep., 1845.

ART. 40.—*Efficacy of the Conium maculatum in the Treatment of Tapeworm.*—[We have already alluded to the employment of the pomegranate bark and the kosso as remedies for this parasite; the following account, by Dr. Maulucci, exhibits the curative powers of the hemlock in a favorable light.] A herdsman, æt. 28 years, was the subject of frequent convulsions, accompanied by great pain in the region of the umbilicus. When seen by Dr. M. the face was pale, the eyes hollow, there was complete prostration of strength, with itching of the eyelids and nose, cramps, vomitings, and flatulence. Upon the suspicion of the presence of intestinal worms, various anthelmintics were given, but without effect. An infusion of valerian appearing to relieve the symptoms, the patient's daughter was in the habit of gathering the leaves of the plant. On one occasion she gathered, by mistake, a considerable quantity of the *conium maculatum*, of which an infusion was made, and taken by the patient. In a short time he experienced the most violent convulsions, with vomiting and purging, and other symptoms of poisoning by hemlock. He was rallied by the use of strong coffee and vinegar, and speedily evacuated an immense tænia, after which his recovery was rapid and complete. Dr. Maulucci had occasion to give the *conium* to an infant infested with the same worm, and succeeded in expelling it, after failing with other medicines. The dose was three grains of the powdered leaves associated with powdered valerian.

*Annal. Univer. de Méd. and Revue Médicale*, Mai, 1845.

ART. 41.—*On the Employment of the Fumes of Belladonna in Hæmoptysis.* M. Schröder speaks highly of this herb in hæmoptysis, used in the following manner:—The dried leaves are cut into small pieces, and about two drachms are then thrown upon burning coals, so that the patient may be enabled to inspire the fumes as they arise. In all the cases of hæmoptysis in which this simple expedient was tried, the author found it effectual in arresting the hemorrhage, generally at the same time allaying the cough, and producing a feeling of relief in the chest. It is singular that inhalation of the steam from a decoction of these leaves, or their internal administration, does not appear to have an equally beneficial effect.

*Annali Universi di Médecin*, Avril, 1845.



## SEC. IX. VARIA.

ART. 41.—*On the Causes of Sudden Death.*

(Medical Gazette, Aug. 1, 1845.)

[The most frequent causes of sudden death, occurring in persons in previously good health, independently of external violence, are distributed by the author of a paper with the above title, under the following divisions. Sudden death arising from causes originating:]

1. *In the head.* a. Rupture of the basilar artery. This is probably the only spontaneous lesion occurring within the skull which *invariably* causes instant death.

b. Rupture of a large artery in the vicinity of the respiratory tract. In two cases reported by Dr. Francis (Guy's Hospital Reports, April, 1845), death occurred within five minutes in one, within ten minutes in the other.

c. Apoplexy of the pons varolii. Death usually instantaneous, but patients sometimes survive more than an hour. When the effusion is situated in the lateral nervous strands, life may be more prolonged.

d. Sudden effusion into the lateral ventricles. Death may occur instantly, or within a few minutes of the seizure. But in many cases the patient lives from one to twelve hours, remaining comatose, with spasm, rigidity, paralysis, or other symptoms of central lesion of the brain, affecting, more or less, both sides of the body.

e. General nervous congestion of the brain and its membranes, especially in coincidence with cardiac and pulmonic obstruction. Dr. Francis relates two cases of sudden death in epileptic patients, in whom none of the marked appearances were such as would have been supposed capable of destroying life. In persons suffering from chronic cerebral disorder, sudden death is liable to occur; the recent morbid appearances being those of venous congestions, serous effusion, or extravasation of blood or serum around the tumor, or other chronic degeneration of the brain.

2. *In diseases of the heart.* a. Rupture of the right cavities, or pulmonary artery. These accidents are immediately fatal in most instances, but not invariably.

b. Inefficiency, by rupture or ulceration, of the pulmonary valves; sudden influx of blood into the right ventricle, or the occurrence of additional pulmonary obstruction. This is especially likely to occur, in consequence either of extensive pulmonary disease, thoracic deformity, partial contraction, or the presence of any other serious impediment to the circulation on the left side of the heart.

c. Rupture of the left auricle. Death instantaneous; the case is one of rare occurrence. Dr. Francis relates a single example.

d. Rupture of the left ventricle. This is generally connected with fatty degeneration of the muscular walls. Death usually, but not always, instantaneous.

e. Rupture of the coronary arteries. Death immediate. The coronary veins undergo great distension without rupture, but their obstruction sometimes determines fatal effusion into the pericardium.

f. Persons who have the left ventricle weakened and dilated, especially where the aortic valves are ineffective, are liable to die suddenly, or a few hours after seizure. These results are induced either by sudden obstruction to the systemic circulation, or by some depressing influence.

g. Sudden rupture of the cords of the mitral valve. Death sometimes within an hour, when the heart is diseased; not suddenly fatal when that organ is healthy.

h. Rupture of the vena azygos. Sudden death from this cause occurred in cases reported by Morgagni and Flügel.

i. Rupture of the aorta or of an aneurism within the pericardium. Instantaneously fatal in most cases; in some instances life is prolonged for hours, or days.

3. *In the respiratory apparatus.* a. Œdema of the glottis. Dr. Francis gives a case of this affection, in which death took place within five minutes.

b. Profuse hæmoptysis. Death may occur either by suffocation or collapse.

c. Bursting of an aneurism into the trachea, bronchus, or substance of the lungs, is generally fatal at the first gush.

d. Rupture of an aneurism into the pleura. Death sudden.

4. *In the abdomen.* a. Rupture of the splenic or coronaria ventriculi artery into the stomach. Death may be sudden from hæmatemesis, but the time of death varies with the size of the aperture and the amount of the bleeding.

b. Rupture of an aneurism of the abdominal aorta. Generally fatal within five minutes, if the extravasation takes place within the peritoneal sac; but when the rupture occurs behind the sac, life may be prolonged from three or four hours to a week.

c. Rupture of the Fallopian tube, or tubal pregnancy. Usually proves rapidly fatal by hemorrhage.

d. Extravasation of fæces, bile, urine, or other irritating matters into the peritonæum, may produce death in from three to seven hours, by collapse, or by inflammation in from eight hours to three days; these cases, however, are not invariably fatal.

[Of 40 cases of sudden death collected by Dr. Francis, and published in the Guy's Hospital Reports for April, 1845, the cause was:]

Rupture of arteries at the base of the brain, 2; venous congestion, 1; chronic disease of the brain, 1; epilepsy, 2; external obstruction at the origin of the great arteries, 3; effect of cold in chronic pulmonary disease, 1; œdema of the glottis, 1; hæmoptysis, 2; rupture of the left auricle, 1; aneurism of the aorta, with debilitated left ventricle, 1; rupture of the aorta at its origin, 1; rupture of a thoracic aneurism, 1; doubtful, 1.

ART. 43.—*On the Pathological Effects of Alcohol.* By Dr. PETERS.

(*New York Journal of Medicine*, vol. iii., No. 9.)

[Dr. Peters has given us the following account of the necroscopic appearances which he has observed in the bodies of nearly seventy persons who have died from the excessive use of ardent spirits.]

"*Head.* There was always more or less congestion of the scalp and of the membranes of the brain, with considerable serous effusion under the arachnoid, while the substance of the brain was unusually white and firm, as if it had lain in alcohol for an hour or two; the ventricles were in most cases nearly or quite empty.\* This peculiar firmness of the cerebral substance was noticed several times, even when decomposition of the bodies had made considerable progress. Typhus fever is the only disease in which we have observed a like firmness.

"*Lungs.* Congestion, amounting sometimes to complete splenization of the pulmonary parenchyma, was a common appearance. The bronchi were very generally found reddened, and more or less filled with catarrhal secretions.

"We must make particular mention of the infrequency of phthisis in drunkards; never have we met a tubercular abscess in them, even of the smallest size, while a small number of chalky tubercles was frequently noticed; and cicatrices also were often met with, and were marked by presence of puckering of the surface of the lungs, of solid bodies which were readily felt before the lung was cut into, and when this was done, they were found to consist of callous fibrous tissue, around which we rarely discovered a few discrete, grey, crude, small tubercular granulations; in every instance these appearances were strictly confined to the upper third of the superior tubes, and the rest of the lungs was entirely free from either old or recent tubercular disease.

"*Heart.* This organ was generally flabby, enlarged, and dilated, but little or not at all thickened; its outer surface was, in most cases, loaded with fat. The blood was often of an unusually fluid consistence. In some cases, where sudden death had been occasioned by the excessive use of ardent spirits, no other appearances were found in the body, except the fluid condition of the blood, congestion of the lungs and membranes of the brain, with serous effusion under the arachnoid.

"*Stomach.* As a matter of course, this viscus very generally exhibited some morbid appearances. Sometimes the mucous membrane appeared perfectly white, and somewhat thickened, with distinct, flat, mammelated elevations of small size. When a quantity of undiluted spirits had been taken shortly before death, the stomach was often found wrinkled or corrugated, as if from the action of a powerful astringent on its upper surface; the mucous membrane exhibiting here and there patches of punctated, star-like or diffused, hemorrhagic inflammation. In ten or twelve of the worst cases, in which from three pints to two quarts of liquor had been swallowed within thirty-six

\* In a case, related in a recent number of the *Illinois Med. and Surg. Journal*, the serum in the cerebral ventricles yielded strongly an alcoholic odor; this was so apparent, that it was readily recognized by every member of the jury.

or forty-eight hours before death, we found extensive hemorrhagic inflammation of the larger portion of the stomach, with effusion of blood in large patches under the mucous membrane. In several instances in which unknown persons were found in the river, with severe cuts or bruises upon their heads or bodies, we have been enabled to testify positively, from the above appearances of the stomach, and those of the liver and omentum, presently to be described, that they had been deep in liquor just before they had fallen into the water, and that in all probability no murder had been committed, as the cuts or bruises would lead one to suspect.

"The *liver*, in moderate drinkers, was generally found to be somewhat larger than usual, its texture softened, and its outer surface spotted, with patches of fatty infiltration extending two or three lines into the parenchymatous substance, the rest of the viscus retaining its natural color, and its edges their normal sharpness. In those, who had been more addicted to the abuse of spirits, the liver was still larger, its edges were more obtuse, and the patches of fat on its surface were larger and more numerous. In old drunkards the liver was very large, weighing at least six to eight pounds, often ten to twelve; the edges were very thick and much rounded; the parenchyma almost white with fat, soft, fragile, and the peritoneal covering could be torn off in very large pieces with ease. Granular liver was found in four or five cases only.

"The *gall-bladder* was always large and filled with bile.

"There is no uniform or characteristic change in the *spleen*: occasionally it is rather larger than natural; but, as a general rule, the small size of this viscus contrasted strongly with the very great enlargement of the liver.

"The appearance of the *omentum* is very peculiar; it is loaded with an ashy grey fat; our attention was called to this in Vienna; it is there regarded as so characteristic, that a man is often judged to have been a drunkard, from a glance at the omentum, when the abdomen is first laid open.

"The *mesentery* is said to be always loaded with a thick layer of fat.

"The *small bowels* generally contained a large quantity of bile, and their mucous membrane was thickly covered with a very tenacious mucus. In eight or ten of the worst cases, numerous and extensive patches of hemorrhagic inflammation were found, with copious effusion of blood in and beneath the mucous membrane. This may account for the frequency of discharges of blood from the bowels of drunkards.

"The whole body of drunkards, with the exception of the brain, generally passes over into decomposition with unusual rapidity."

[Dr. Peters closes his interesting paper with the following pathological conclusions on the *modus operandi* and general morbid effects of the immoderate use of spirituous liquors.]

"The most important appearances are the fluid and venous condition of the blood, and the great superabundance of fat. According to Heinheimer and Boesch, alcohol acts directly on the blood, and drunkenness is owing to an alcoholic venous plethora, in which the proportion of hydrogen and carbon in the blood is much increased. The same alteration of blood occurs in poisoning with narcotic drugs, and the delirium and excitement of the nervous system, produced by them and alcohol, is supposed to be secondary to this change in the quality of the blood. According to Orfila, if a large quantity of alcohol be taken during, or shortly after a meal, it coagulates the albuminous portions of the contents of the stomach, and this coagulated albumen passes off almost unchanged into the small intestines. The action of the gastric juice upon other portions of the food is prevented, and they undergo acetous fermentation. A large quantity of pure alcohol also reaches the duodenum, mixes with the bile, which loses its alkaliescence, and can no longer be precipitated into insoluble flocculi by the addition of the acid chyme, as is normally the case; in the natural state, this insoluble precipitate from the bile is not reabsorbed, and is cast out with the feces; but in drunkards no such precipitate ensues, the bile remains fluid and unchanged by the chyme, and a larger portion of it is reabsorbed; hence the bilious difficulties in drunkards, and the frequent occurrence of jaundice in them. Large quantities of acid chyme, and imperfectly digested food pass along the small intestines, and even reach the cæcum and colon, where they also undergo acetous fermentation; this is sufficient to account for the dyspeptic difficulties and sour eructations in drunkards. The blood, which returns from the intestines into the vena portæ system and liver, is more or less mixed with alcohol, imperfect bile, and other impure matters; hence the venous plethora of the vena portæ, and subsequent affections of the liver; as much bile is

brought back to the liver, it is doubtless resecreted from it with great rapidity; hence, among other causes, the large quantity of bile which is usually found in the gall-bladder and small intestines.

"The chyle which is absorbed by the lacteals must be very imperfect, and is mixed with more or less alcohol; of course the blood, which is formed from it, is equally imperfect. If alcohol be added to the blood which has been drawn from a vein, the blood becomes dark; it loses its normal opacity, becomes transparent, and changes to a cherry-juice like fluid. With the aid of the microscope, we see the blood-globules gradually losing their red coloring matter, which becomes equally dissolved and diffused through the serum, which assumes the peculiar cherry-red color; this serum coagulates to the consistence of thick milk, but cannot form solid coagula, and no watery particles separate from it. These appearances agree with those of the blood in topers, which is thick but fluid; it coagulates very loosely, contains but little fibrin, but much albumen and fat.

"According to Rokitanaky, Andral, and Engel, the blood in tubercular cachexia is arterial and rich in fibrin, while in the cancerous cachexia and typhus fever, it is more venous, it abounds in albumen, and is deficient in fibrin; hence, alcohol would seem to produce a state of the blood opposite to that which occurs in tubercular disease, and is somewhat similar to that which obtains in cancer; therefore, it may prevent the development of the former, and hasten that of the latter."

#### ART. 44.—*Teeth and Tooth-Powders.* By Dr. HELDER.

(*Estr. Medicin. Wochenschrift*, and *Chemical Gazette*, June 15, 1844.)

Among the constituents of a good tooth-powder, the first in importance is *charcoal*, and especially *lime tree charcoal*. It forms a very soft and cheap powder, and moreover possesses the valuable property of absorbing cohering substances, and destroying the disagreeable odor produced by carious teeth. Small quantities left in the spaces between the teeth have a disinfecting action on the particles of food which collect there. It does not, it is true, possess a pleasing color, and is on that account rejected by many; moreover, particles sometimes accidentally get in between the teeth and gums, and shine through with a bluish color.

Next to it in importance is *carbonate of magnesia*, both on account of its absorbent power and its extreme softness. Its property of neutralizing acids deserves particular attention, and, from its white color, any pleasing tint may be imparted to it by some harmless coloring substance.

The *lapides cancrorum* and *creta alba preparata* resemble the carbonate of magnesia in their chemical behavior, and in their action. *Ossa sepiæ conchæ preparata*, *corallia alba et rubra*, are, as carbonate of lime, insoluble, like the two preceding, in the secretions of the mouth; but they are less soft, and should therefore only be employed by grown up persons, and even then should be mixed with other powders.

Ashes are less to be recommended; they are sometimes even injurious, for in them the alkali is not neutralized by carbonic acid. Soap, in which the alkali is combined with fatty acid, deserves the preference, and, were it not for its disagreeable taste, would form an excellent ingredient in tooth-powders.

*Orris root* is a harmless substance, and is generally added to tooth-powders on account of its agreeable odor. Many of the ingredients most frequently mixed with tooth-powders, such as alum, cream of tartar, tartaric and citric acids, borax, chloride of lime, &c., are absolutely injurious, and should always be rejected.

The most usual coloring substances employed are carmine, *Florentine lake*, *sanguis draconis*, *bolus armeniaca*, *corallia rubra*, *coccinella*, *lignum Santali rubrum*; but only the first two give a beautiful color, in small quantities.

To please the organs of smell and taste, a few grains of *vanilla*, or a couple of drops of an essential oil, such as *bergamot*, *neroli*, *rose oil*, *oil of cloves*, or *oil of peppermint*, may be added.

With respect to the mode of application, it is recommended to clean the teeth with a soft brush and some powder, in the evening, before going to rest; otherwise the particles of food have time during the night to undergo putrefaction, and, when removed in the morning, may have already produced considerable injury.

Professor Carebelli used to prescribe a grey tooth-powder, in the following form:

℞ Pulv. oss. sepiæ;  
 Lapid. cancrorum ʒ iss. aa.  
 Corticis cinnamoni;  
 Iridis Florentinæ;  
 Carb. lign. tilis 3 iij. aa.  
 Vanillæ gr. x. Misce.

For a less expensive powder, calcined oyster shells might be employed instead of *os sepiæ*, and a few drops of bergamot oil instead of vanilla. He objected to red tooth-powders, from their rendering it impossible to tell when the gums bleed.

For children and young people carbonate of magnesia, without any other addition, is most to be recommended, because, on account of its softness, it is not liable to injure the still weak enamel, and, at the same time, it neutralizes the acid which frequently occurs in the secretions of the mouth in children.

ART. 45.—*Formula for extempore gaseous Chalybeate Water.* Take of crystallized sulphate of iron two drachms, white sugar three drachms; pulverize, and divide into twelve powders. Take of bicarbonate of soda two drachms, sugar three drachms, and divide also into twelve powders. One of each is mixed in half a tumbler of water, and drunk while effervescing.

*Medical Gazette, Sept. 12, 1845.*

ART. 46.—*Mode of conducting a pathological Analysis of the Blood.* 1. A glass containing exactly 1000 grains of water is filled with blood directly from the vein; a glass stopper, fitting hermetically, is then inserted (care being taken to remove all bubbles), and the specific gravity of the blood ascertained. By continually shaking it, the blood is kept fluid; it is then poured into a porcelain vessel, and evaporated, care being taken to wash the glass out with distilled water, and add the latter to the other. The quantity of solid residue is reduced to the proportions in 1000 grains of blood. 2. A glass two and a half ounce measure is filled with the blood immediately after the preceding, covered and set aside for eighteen hours. The clot is then carefully separated from the serum, and the weight of both ascertained. 3. The clot is now to be pressed through a linen cloth four inches square, and first the fibrine, then the fluid cruor collected. Each is thoroughly washed, freed from moisture, and weighed; they are then carefully dried, and again weighed. The results are to be reduced to the proportion in 1000 grains of blood. 4. The serum and clot are to be placed in a glass containing 360 grains of distilled water, and their specific gravity noted; then 250 grains of each, at the same temperature, are to be dried so long as they lose weight; the weight of the residuum is then to be reduced to the proportion in 1000 grains. There is a loss of weight by pressure through the linen, but as this will happen in the same proportion in all instances, the general results are correct.

Dr. Zimmermann observes that this method will be more suitable to the practical physician than Andral and Gavaretti's, because of its greater simplicity and easier performance, while the results are quite as correct as by the latter method.

*British and Foreign Medical Review, Oct., 1845.*

## PART II.

# S U R G E R Y .

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### SECT. I. SYMPTOMATOLOGY AND DIAGNOSIS OF SURGICAL DISEASES.

#### ART. 47.—*Periostitis in the Orbit.*

By J. HAMILTON, M.R.I.A., Richmond Hospital.

(Condensed from the *Dublin Journal*, July, 1845, p. 385.)

MR. HAMILTON describes four cases of this disease, which he believes to be of somewhat rare occurrence. Two of these succeeded to unequivocal syphilitic symptoms. In one, the disease extended to the brain, and the patient died. The third case was a tumor in the roof of the orbit, displacing the eye, which Mr. Hamilton believes also to have arisen from inflammation of the periosteum. Where this inflammation occurs without any observable swelling it is easily mistaken. In one case it was overlooked for several weeks, during which the patient suffered great pain along the eyebrow, forehead, and side of the head. The eye protruded, and vision was temporarily extinguished. On pressing upwards instead of forwards extreme tenderness was found in the orbital plate of the temporal bone. In all the cases the author has met with the disease occupied the inner two thirds of this plate, which may be explained by the part being covered with integuments only. In the case of tumor in the left orbit the vision became troubled, the patient seeing double, one object above another. This latter peculiarity, the result of the difference of the axis of vision in the two eyes, distinguishes this symptom from the double vision resulting from morbus cerebri, where the two images generally appear side by side.

The patient soon became conscious that the eye was pushed out of its place, there was a constant sensation of dust in the eye, and he had not quite as perfect a power of the motion of it, and of the eyelid, as previously. On admission his state was as follows. The eye was displaced downwards, forwards, and a little outwards; the infra-orbital fossa nearly filled up, particularly on the inner side; in which situation, immediately under the orbital ridge, a small smooth tumor could be felt, very hard, like bone, and evidently springing from the roof of the orbit; deeper than this there was a small soft swelling like a soft tubercle. No discoloration was observed in the integuments; there was a little tenderness over the swellings, and here, and in the supra-orbital region, he formerly used to suffer pain. He was not subject to headache, but had violent earache of the left side; he thinks a year ago the eye was more displaced than now.

When in this disease the pain in the eyebrow is accompanied by swelling beneath it, and displacement of the eye, its recognition would appear to be easy. The important point of diagnosis is that pressure under the eyebrow in the orbital plate gives great pain—"the true shrinking pain of periostitis." From the cases related, it follows that we may meet with:

1st. Pain in the orbit, supra-orbital region, temple, and side of the head from periostitis, with little apparent swelling.

2d. With such amount of swelling as to displace the eye.

3d. With suppuration, caries of the bone, and perforation of the frontal sinus; or

where the disease is situated deeper than the frontal sinus, the diseased action may extend through the orbital plate of the frontal bone into the cavity of the cranium, to the membranes of the brain, and cause death.

These varieties will be readily explained by attending to the different forms in which periostitis presents itself, either simple thickening of the periosteum, or deposit of serum, cartilage, bone, or pus between it and the bone. In cases of pain in the orbit, &c., pressure should always be made directly upwards on the roof of the orbit; acute persistent tenderness in that situation being one of the most decided marks of the disease.

ART. 48.—*On the distinctive Symptoms of Disease of the Hip-joint, and some Affections involving the Psoas-iliac muscle.* By H. J. JOHNSON, Esq.

(*Lancet*, Aug. 30, 1845.)

1. *Disease of the bursa beneath the tendon of the psoas-iliac muscle, counterfeiting disease of the hip-joint.* Mr. F., a surgeon in the country, became alarmed in consequence of a gradually increasing lameness, and several eminent surgeons were of opinion that he labored under disease of the hip-joint. There was much pain referred to the front of the hip and groin, always present, but sometimes much aggravated and increased by the motions of the limb, which it greatly interfered with; there was lameness, partly due to the pain and partly to stiffness about the joint; the limb was wasted, and Mr. F. supposed shortened, and the health had suffered. Mr. Johnson found just below Poupart's ligament, and evidently deeply seated, an obscure yet not undefined swelling, over the capsule of the joint. So far as could be made out it felt flattened, oval, and not free from tenderness. The head of the femur was forcibly thrust into the acetabulum by pressure and by shocks upon the foot, the thigh was flexed so that the knee almost touched the breast, the foot everted, constituting both compression and friction,—none of these motions produced pain. When the limb was extended, or dragged violently down, so as to pull the bone from the socket by traction on the capsule, or the foot forcibly inverted, there was pain. Pain was also produced when the patient himself everted the foot or flexed the limb, and in every instance it was referred to the front of the joint, the site of the tumefaction.

The tendons of the psoas magnus and iliacus internus coalesce before they reach the capsule of the hip-joint, so as to form one fibrous mass, by which the muscles are jointly inserted into the trochanter minor. This psoas-iliac tendon plays on the capsule, and is allowed to do so by the intervention of a bursa. Always distinct, this is sometimes of great size, and occasionally communicates through a perforation of the capsule with the synovial membrane of the hip-joint.

This bursa, inflamed, thickened, and enlarged, would account for the symptoms. It would escape compression when the surgeon forced the head of the femur into the socket, or flexed the thigh, or everted the foot; for by none of these actions was the superjacent tendon put upon the stretch. But the tendon was stretched and the bursa compressed when the surgeon extended the limb, or dragged on it, or turned the foot inwards; as also when the patient, throwing the psoas-iliac muscle into action, flexed the limb or turned it outwards.

The result appeared to prove the correctness of the diagnosis. Under an appropriate plan of treatment the pain gradually became more bearable—it greatly diminished or altogether ceased. The lameness which remained was that of rigidity and thickening about the fibrous textures external to the joint, and in the later period of his life the affection of the hip became a secondary consideration, the patient having since died of some visceral disease.

2. *Disease of the spine, counterfeiting disease of the hip.* Mr. S. complained of pain in the front of the hip, more severe at one time than another, and usually increased by exercise. He walked lame, with his body rather bent, and the limb, in appearance, shortened. His health had declined, and hectic symptoms were distinguishable. The disease had come on insidiously, had progressed gradually, and had been pronounced "disease of the hip-joint." Mr. Johnson proceeded to examine the limb accurately. On forcing the head of the femur into the socket, on flexing the thigh, and on everting the foot, no pain of any moment was produced. On extending the thigh, on pulling it downwards, and on inverting the foot, pain occurred. When the patient

flexed the thigh or everted the foot, equally decided pain was produced. The pain was referred to the front of the joint, but in some of the movements, especially when the limb was widely extended or inverted, or dragged down, an obscure uneasiness about the spine was confessed to. Disease of the spine was inferred; for the direct pressure, and grinding as it were the articulating surfaces together, must have produced pain if the joint were diseased; while all those actions which necessarily dragged upon the psoas-iliac muscles, and through their medium on the vertebræ, as also the voluntary motions of the patient which threw those muscles into action, producing pain, was almost conclusive evidence of a disease of the spine.

Further investigation strengthened this evidence. The limb was kept permanently flexed, though not to any extent, for the purpose of relaxing the psoas-iliac muscle; in walking, the body was bent towards the affected side; the apparent shortening of the limb was merely the result of inclination of the spine, and there was more uneasiness of the loins than the patient had previously admitted. Very little could be discovered on examination of the spine itself.

After the lapse of about five or six months, an abscess formed in the loins close upon the lumbar vertebræ, and some portions of bone subsequently escaped; completely verifying the diagnosis. After three or four years' confinement to bed the patient recovered. This case illustrates the fact, that disease in the lumbar vertebræ is often characterized in its earlier stages by pain referred to the hip-joint, and lameness; as pain and lameness are referred to the knee in disease of the hip-joint.

ART. 49.—*Diagnosis of Fractures of the Neck of the Femur.* Instead of employing auscultation in the horizontal position, M. Lionet proposes that the patient should be supported by his sound limb on a stool, so as to abandon the affected limb to its own weight; and that the surgeon should place his ear over the neck of the bone while the limb is moved. A distinct crepitation will be heard. Vidal remarks that manifestly there are cases in which this proceeding could not be adopted, but it must be granted that for the purpose of diagnosis it is preferable to auscultation in the horizontal position.

*Gazette des Hôpitaux*, June, 1845.

ART. 50.—*Diagnosis of Urinary Calculi.* An ingenious instrument as to the principle of its construction has been suggested by M. Secondi. In the first place, substances which may simulate the presence of stone in the bladder, whether fibrous or fungous, have never so much consistence but that by pressing on their surface with a metallic instrument, the latter can be depressed. If, then, the bladder being full of urine, a hollow sound is introduced without lateral eyes, from the moment that its extremity is applied with some degree of force against the foreign body, that body being soft, the urine will cease to flow. If, on the contrary, there is really a calculus, its surface will never be so smooth and equal that the edges of the open extremity can be applied with sufficient exactitude to prevent all escape of the liquid, and the urine will continue to pass through the sound. To render the experiment more complete, a syphon may be adapted to the external opening of the instrument; if, now, the course of the urine is suspended, a soft substance and not a calculus assuredly exists; always taking care to be certain that the end of the sound is not closed by the coats of the bladder. If, however, the urine continues to flow, it cannot be inferred with equal certainty that a calculus is in the bladder, since numerous circumstances, not easily avoided, might prevent the exact apposition of the instrument,—to a polypus for instance. The principle is good, and as such is susceptible of being perfected.

*Congrès Scientifique de Milan. Encyclographie Méd.*, Avril, 1845, p. 243.

ART. 51.—*Musca Volitantes.* By WM. MACKENZIE, M.D.

[*British and Foreign Medical Review: from the Edinburgh Medical and Surgical Journal*, July, 1845.]

The appearances seen before the eyes, known under the name of muscæ, are of two principal kinds, such as have both apparent and real motion, and such as have apparent motion only—motion depending on that of the eye itself. These two kinds of muscæ are distinguished by the names of *floating* and *fixed*, and are quite different in their nature.



*Floating muscæ.* These are the most common kinds of muscæ. Overlooking the real motion which these muscæ present, some have viewed them as subjective sensations, depending on some intrinsic change of state of the optic nervous apparatus. That they are truly objective sensations, however, occasioned by the presence of particles in the interior of the eye indeed, but extrinsic of, and in front of the retina, admits of mathematical demonstration. But more than this: the particles appear to be of normal occurrence in the eye, for the appearance of floating muscæ may in general be seen by any person, by simply looking through a small aperture in a card at the clear sky, or through the eyeglass of a compound microscope at the flame of a candle two or three feet distant.

On contemplating the spectra thus brought into view, viz.—the beaded filaments, the distinctly and indistinctly defined globules, and the watery-like filaments, called by Dr. Mackenzie, respectively, the *pearly spectrum*, the *distinct insulo-globular spectrum*, the *indistinct insulo-globular spectrum*, and the *watery spectrum*, it is observed that they are situated in different planes, one behind the other, “that they never mingle with one another so as to change the order in which they stand before the eye, but the pearly spectrum always appears the nearest, then the sharply-defined insulo-globular, then the obscurely defined globules, and farthest away the watery threads.”

*Seat of the particles the presence of which occasions floating muscæ.* A spectrum, like opaque spots surrounded by a halo, which occasionally seem to run together into dots, which again divide and disappear, and which ascend after every nictitation, which is sometimes seen and which appears to be produced by the layer of mucus and tears on the cornea,—called therefore, by Dr. Mackenzie, *mucolachrymal muscæ*—has been confounded with floating muscæ, and the latter attributed to the same cause. That the particles which occasion floating muscæ, however, are situated in or behind the vitreous body, but in front of the retina, admits of being mathematically demonstrated, as also that they occupy different situations—those producing the pearly spectrum being the nearest to the retina, those producing the watery spectrum the farthest from the retina, the insulo-globular intermediate.

As to the nature of the particles, this admits of less satisfactory determination than their existence and seat.

The action on the light by the particles, whatever they may be, which cause muscæ, appears to be diffraction or inflexion.

Though floating muscæ thus depend on a cause extrinsic to the retina, their being ordinarily seen is owing to a morbid and excitable state of the retina,—a state, however, which has no necessary tendency to run into amaurosis.

*Fixed muscæ.* These appearances, which are in their nature amaurotic symptoms, never change their position either in regard to each other or to the optic axis. They have thus no real motion, but merely apparent motion depending on the motions of the eyeball. It often, however, requires some attention and power of observation on the part of the patient to distinguish real from apparent motion.

Fixed muscæ vary in number, size, and form. At first semi-transparent, they afterwards become black, or at least dark. They appear like blotches when the patient looks at a sheet of white paper. Fixed muscæ are owing to spots of the retina becoming insensible. The insensible spots are apt to increase in size gradually, until the whole retina is overspread with insensibility,—is amaurotic. Examples of temporary fixed spectra depending on natural states of the eye, are the vascular spectrum in Purkinje's experiment, and the phenomena of accidental colors and ocular spectra.

ART. 52.—*Diagnosis of Fractures of the Base of the Cranium. Fluid discharged from the Ear.* By DR. LAUGIER.

(*Archives Générales*, Août, 1845.)

It was only within a few years that one of the most certain signs of fracture of the base of the cranium received attention. A fortunate circumstance gave Dr. Laugier an opportunity for the first time, in 1835, of noticing and studying the singular phenomena of a running from the ear, at first bloody, then becoming as colorless and limpid as water. Since then, ten or twelve cases have been noted by different observers. Autopsy confirmed the conjecture that the limpid fluid was the serosity of the blood which filtered through a chink in the os petrosus, passed into the cavity of the

tympanum, and thence into the external auditory canal. In support of this opinion, Dr. Laugier gives the case of a mason, aged 23, who fell nearly thirty feet upon his head; he lost all power over his limbs, but they were sensible; after a short interval he recovered the use of his arms, and then of his legs, but answered no questions put to him; some drops of blood came from his nose and ears, but this had ceased by the time he arrived at the hospital. The next day a bloody tumor, three or four inches in diameter, was observed over the coronal suture; and the same evening, that is, thirty hours after the accident, a large quantity of transparent fluid, streaked a little with blood, was, for the first time, observed to flow from the ear; the pillow-case was wetted, and about an ounce was discharged in three hours, the left ear was dry. The fluid continued to flow for the two succeeding days, and then ceased, and the patient sunk.

The fluid contained no appreciable quantity of albumen. On dissection, a fissure was found without displacement, beginning at the coronal suture, going downwards and backwards, passing behind the sphenoid bone, reaching the petrous portion of the temporal bone about its middle, and terminating at its posterior margin. It penetrated the cavity of the tympanum, the lining membrane of which was torn; between the dura mater and bone there was a collection of blood, forming a clot about six lines thick, occupying all the temporal fossa, and bounded below by the petrous portion, with the color and consistence of very fine currant jelly; the dura mater was not torn, and the brain was uninjured.

A second case was that of a child four years old thrown on the pavement by an omnibus. It was taken to the hospital in a state of profound coma, while motion and sensibility to external impressions remained; blood flowed from the left ear in such quantities that it filled the concha in a few seconds; the next day the concha was found filled with a watery fluid very slightly colored, which was renewed as fast as it was sponged away—a certain sign to Dr. Laugier that the petrous bone was fractured. The fluid began to ooze on the preceding night. The third and fourth day it continued to flow, and only ceased after the trepan was applied on the fourth day. On the following evening the coma appeared less. The patient lived till the sixteenth day, being carried off by meningitis. On examination, a fissure was found, beginning at the top of the coronal suture, the left side of which it accurately followed for three inches, then suddenly branched off at a right angle, and traversed the left parietal bone to the extent of three and a half inches; below this was a stellated fracture, on the centre of which the trepan had been applied. One of the fissures, extending from this fracture, traversed the petrous bone, where it forms the roof of the external auditory canal, and parallel to its axis; the membrana tympani was completely destroyed. The dura mater was separated from the bone at the first-mentioned fracture to the extent of four and a half square inches, and under it was a fibrous clot, blackish within, but covered with a greyish film on its outer surface. It adhered strongly to the dura mater. The separation of this membrane from the bone extended to the lower fracture, but not to the base of the skull—the dura mater was not in the slightest degree torn.

Several other cases are quoted. In one the quantity of uncoagulable watery fluid which came away exceeded a tumblerful. In one case the watery fluid came from the nose, and not from the ear, and the fracture was found to traverse the sella turcica, the lining membrane of which was torn. In another, in which the fluid came from the right ear, the dura mater was uninjured and adherent throughout; two fissures proceeded from the floor of the left orbit—one began at the inner side of the orbital cavity, went backwards, followed the sulcus of the cribriform plate of the ethmoid bone on its outer side, and united itself to another fissure, the middle of which passed across the body of the sphenoid bone, in front of the sella turcica; having begun about the middle of the squamous suture of the left side. It took its course inwards, and a little forwards, across the middle fossa of the base of the skull, and ended at the juncture of the petrous bone and the basilar process. A small coagulum was found under the dura mater, in the left ethmoidal suture, and in front of the middle fossa, near the external extremity of the foramen lacerum orbitale. On the right, a fissure ran across the petrous bone near the cranial opening of the hiatus Fallopii, which terminated in the jugular fossa, the dura mater lining of which was not torn. A second fissure ran parallel to the furrow of the vidian nerve, and in front of it, communicating with the right sphenoidal sinus, and terminating behind on the roof of the tympanum. The mucous membrane of the sinus was torn, and in its cavity was some coagulated blood,

which was continued into the nasal cavity. The first of these fissures opened a communication between the cavity of the cranium and that of the vestibule, and the second between the cranium and the tympanum. The membrane of the tympanum was found torn, the stapes broken across, and a free communication opened between the vestibule and middle ear through the foramen ovale. The membranes of the brain were uninjured.

From the whole of the cases which have been examined, Dr. Langier infers : 1. That the appearance of the watery fluid in the ear always indicates fracture of the petrous portion of the temporal bone, but with hardly any appreciable separation of the pieces from each other. 2. That an effusion of blood between the dura mater and the bone is constantly observed over this fracture. 3. That laceration of the membranes of the brain is not essential to the production of this symptom. 4. That if the fractured portions of the petrous bone be separated a line or two from each other, blood alone continues to be discharged from the ear, but no watery fluid.

The fluid cannot be that of the cerebral cavities, but is the serosity of the effused blood, squeezed out by the pressure and motions of the brain, and filtered through the narrow fissure. The objections to this opinion are : 1st. The quantity of watery fluid which sometimes escapes. 2d. The differences observed between the fluid and the serum of the blood. In one case nearly twenty ounces were discharged in three days, and in another ten ounces in forty-eight hours. This appears too large a proportion to the coagulum found under the fissure, but the latter, having been subject to compression, is found almost dry, which at least proves it to be one source of the fluid. In wounds of the soft parts, with effusion of blood into the wound, when this ceases to flow externally, a serous discharge, which saturates the lint and compresses, succeeds, and this is exactly what happens in the case of the ear. Dupuytren always concluded, from the appearance of this watery discharge from deep wounds, that hemorrhage had taken place within. In both cases it comes from the effused blood, and also from the lacerated vessels themselves, after they have ceased to pour out blood. The fluid from the ear differs chemically from serum, in containing a double portion of chloride of sodium ; and, although heat and nitric acid produce no coagulation, shreds of coagulated albumen or fibrin are observable in it ; but Dr. Langier does not consider the analysis sufficiently exact to confer much weight on any objection that might be raised. That the origin of the fluid is not from the natural cerebro-spinal fluids is obvious, from the membranes of the brain being in many cases uninjured. That it is not the fluid of Cotugno is plain from its quantity, and from the fact that in many cases the openings of the internal ear remain intact.

## SECTION II. NATURE AND CAUSES OF SURGICAL DISEASES.

### ART. 53.—On *Lymph Abscess*. By Professor CHELIUS and Mr. SOUTH.\*

Nasse describes a case in which a powerful, healthy young man, in consequence of an external injury, had a swelling formed on the upper part of the thigh, the contents of which, after opening, perfectly resembled lymph. The pouring out of a clear, transparent fluid, could not be allayed by any treatment recommended for lymph-swellings, and the patient was exposed to the danger of hectic consumption. The local use of a solution of nitrate of mercury alone brought the secretions of the lymph-vessels to a close. This case proves that a collection of lymph in the cellular tissue is possible, as the consequence of an actual tearing of lymph-vessels by external violence, the exudation from which ceases only by obliteration of the torn vessels. Cases of this kind are, however, undoubtedly very rare ; to them alone can be applied the term *lymph-swelling* in its proper sense, and therefore the opinion, "*that the cases commonly spoken of as lymph-swellings are merely modifications of abscesses,*" is rather confirmed than contradicted. This opinion Langenbeck has also advanced, although, he adds, that not unfrequently a swelling is observed on the elbow, which is formed

\* *System of Surgery*, p. 48.

sometimes from a local cause, and sometimes also without, situated immediately on the olecranon, and containing a clear lymphatic fluid enclosed in a cyst, which deserves the name of lymph-swelling. I must yet deny this assertion, as this swelling at the elbow-joint is a dropsey of the mucous bag there situate, and may be compared to the *hygroma cysticum patellare*. Just as little also can I agree with the opinion of Ekl, who considers the lymph-swelling as an expanded mucous bag in which there is a diseased secretion going on. Zembach, according to Kluge, in order to accommodate the different opinions of writers, distinguishes, 1st, the acute and chronic lymph-swelling, as idiopathic and symptomatic disease; 2d, the false lymph-swelling or lymphatic abscess.

Mr. South says: a case marked in my note book, "Collection of Synovial Fluid within the Femoral Sheath," which occurred in St. Thomas's Hospital, in 1839, seems to me more nearly allied to the lymph-abscess of this paragraph, of which I was then ignorant, than to a collection of synovia, as I thought it perhaps might be. The patient was a healthy country lad, seventeen years old, who three years previously had received a blow on the upper and outer part of his left thigh, but seemed to have recovered from its effects. Two months since he noticed a swelling on the outside of the same thigh, about a hand's breadth above the knee-cap, which gradually increased both downwards and upwards, so that at his admission it occupied the outer and fore part of the thigh, from a little above the knee to near the great trochanter, fluctuated distinctly, and was presumed to be an abscess in the outer chamber of the femoral sheath. Fifteen minims of tincture of muriate of iron in mucilage, thrice a day, were ordered, to excite absorption, which was continued for nearly three weeks without benefit. The thigh then having increased, and fluctuation and swelling having extended about the whole knee, I made an incision two inches long, about the middle of the outside of the thigh, expecting to evacuate pus or open the femoral sheath; but neither pus nor any other fluid escaped, although I cut into the *m. vastus externus* an inch deep. A tent of lint was left in the wound to keep it open, and hasten the escape of pus if any should make its way through the wound; but none appeared, and in the course of a fortnight the wound had entirely healed. The tincture of iron, which had been continued to this time, was now left off, and two grains of iodide of iron thrice a day ordered in its stead. A week after the whole thigh was wrapped in mercurial ointment, and swathed in a roller. This treatment was continued for three weeks, but without any diminution in size, or apparent change; fluctuation was still very distinct. It was therefore determined to introduce a grooved needle about the middle of the thigh, and some fluid very similar to synovia escaping, an abscess lancet was then thrust in, making an opening an inch long in the skin, and half its length in the sheath, from which escaped about twenty ounces of the seemingly synovial fluid, which nearly emptied the cavity, leaving a rather moveable lump about the middle of the fore part of the thigh, the character of which I could not make out. The edges of the wound were carefully brought together, the limb rolled, and in four days union had taken place. A week after, another free puncture below the former voided a quart of the same fluid as before, and on applying heat it coagulated speedily and almost entirely. The wound was left open, and a roller applied above and below it; but in the course of a week it had again united, and fluid was again secreted, though in smaller quantity. A solid but moveable swelling had at this time also formed to some extent round the wounds. The iodide of iron was then omitted, and instead was ordered decoction of sarsaparilla four ounces, with five grains of iodide of potash twice a day; the whole thigh to be enveloped in ointment of iodide of potash. In three weeks the solidification had increased, and the fluctuation generally was less distinct, and soon afterwards the ointment was given up, and mercurial plaster applied. Two months after having begun to take the iodide of potash, the thigh had much diminished, there was less fluctuation, the middle outer skin was almost solid, and there was less effusion about the knee. The diminution of size and fluctuation continued, and in about two months the patient was able to walk about. Four months afterwards, when he left the hospital, the swelling about his knee, although not completely subsided, had so considerably diminished as not to interfere with his walking.

This must be regarded as a distinct disease, and we do not find it described in other systematic works.

ART. 54.—On a Disease of the Tongue. The appearance of this disease, as de-

scribed by Dr. Heming, although varied in degree are uniform in character. In the early symptoms the tongue is oedematous, sulcated, and prone to become ulcerated on the borders of the sulci, or in parts which may be irritated by the contact of a decayed or ragged tooth; the surface then becomes morbidly smooth in longitudinal streaks, the papillæ being apparently obliterated; the whole organ assumes the same character, becoming dry and hard in its texture, the ulceration becomes more marked, is sometimes superficial, and in some cases forming deep ragged ulcers; in one case the ulcers had pierced entirely through the organ. Dr. Heming detailed five well-marked cases; they all occurred in females, and the general constitutional health was much impaired, the patients suffering from sick headaches, deranged digestion, oedematous ancles, &c.; in some cases the disease was of many years' continuance. In the treatment, the restoration of the general health is of primary importance: after the ordinary aperients, soda and cicuta should be given, and continued during many weeks. The most useful local application is nitrate of silver; by perseverance every case under Dr. Heming's care got well.

*Report of the British Association for the Advancement of Science, 1845.*

ART. 55.—*Polypus of the Rectum.* By Professor SYME.

*(The London and Edinburgh Monthly Journal, July, 1845.)*

This disease presents itself in three different forms, of which one usually occurs in childhood; this does not appear much beyond puberty, and, with one exception, Mr. Syme has not met with it beyond the ninth or tenth year; it is extremely soft and vascular, of a florid red color, and assumes the form either of a worm from one to four inches in length, or of a strawberry with a connecting footstalk two or three inches long; and it seldom protrudes, except when the bowels are evacuated, and then admits of ready replacement, though not without occasional hemorrhage, which may be of considerable amount. Its vascularity, and attachment above the sphincter, are reasons against removing it by excision, and Mr. Syme has always employed the ligature, which has never been attended with any disagreeable result.

The disease appears in adults in two very distinct forms:

1. The growth is soft, vascular, prone to bleed, lobulated or shreddy, and malignant-looking, so as on the whole to resemble very much the cauliflower excrescence of the os uteri, but possesses a peduncle of firm texture, capable of sound cicatrization after being divided. The profuse, frequent, and protracted bleeding which proceeds from this sort of growth, renders its removal an object of great consequence; and this may be effected very easily, with perfect safety, by transfixing the radical cord of connexion with a double ligature, tying the threads so as to include a half of it in each, and then cutting it across, a little below the constricted part. In one case Mr. Syme could not accomplish protrusion of the tumor, but guided a ligature on his finger, and tried it on the neck within the rectum. It is more satisfactory to draw the swelling beyond the sphincter, so that the sound and morbid parts may be distinguished with certainty; and this can usually be done with great facility, although the growth has attained a large size. In one case, successfully removed, it was as large as an orange.

2. In the other form, the polypus of adults is of a firmer consistence, smoother surface, and of a more regularly spherical or oval form, so as to resemble the growth which in general constitutes *polypus uteri*. The symptoms are rather annoying than seriously alarming, and the patient is apt to delay requiring assistance. In the case of an old lady, the tumor was about the size of a cherry, with a long stalk, and the surgeons were assured that it had protruded, every time the bowels moved, for twenty years. In another case, the tumor was nearly as large as an egg, had a cuticular covering, and appeared to have existed for a period equally long. Mr. Syme has always removed these growths in the manner here described, and never met with the slightest consequence of a disagreeable kind.

ART. 56.—*Fracture of the Scapula by Muscular Action.* By Dr. HEYLEN.

*(Annal. de la Soc. Méd. d'Anvers, and Journal de Chirurgie, Mai, 1845.)*

H. S., aged 49 years, a laborer, of excellent health, "dry" constitution, but with

muscles well developed, returning from market the 9th of November, was jumping into his cart, when the horse set off at full gallop. Not being able to scramble into the cart, and not daring to let himself fall for fear of being caught by the wheels, he held himself on the edge with his left hand, which had to support the whole weight of his body, whilst with his right hand he held the reins of the horse, and tried to stop it. Thus suspended by the left arm, and not venturing to change his position from the rapidity of the motion, he must have made great efforts to preserve his equilibrium, until, after having proceeded a hundred yards, the animal stopped, and allowed him to put his feet to the ground. He did not at first feel any pain, but found some difficulty in approximating the arm to the body.

In the evening he felt a sharp pain in the left shoulder, which, by the least motion of the arm,—on coughing or sneezing,—became a lancinating pain. He remained in this state until the 11th, when he applied to Dr. Heylen, thinking he had sprained his shoulder. On examination the following symptoms were observed:

The shoulder presented no manifest deformity when the arm was applied to the trunk. It was not greatly swollen. On separating the arm from the trunk and raising it, the hand could be easily applied to the head. He was prevented by pain from doing this himself, without the aid of the other hand. On letting the arm fall, a degree of rigidity was observed in its motion, and it was only by raising it that it could be returned to its original position. At a certain point, the patient screamed, and said he heard a cracking, which was also felt at the hand. No loss of continuity could be detected in the clavicle or humerus. On examining the shoulder it appeared to be normal, yet it was certain that bony crepitation was felt. On sliding the finger along the spine of the scapula, a depression was found in the middle of the apophysis; and, on pressing the most elevated part, it gave way with crepitation. This was also produced on rotating the arm, the finger being placed on the spine of the scapula and also on the clavicle. To determine whether it was a fracture of the spine, the base being separated from the body of the bone, a finger was placed on the coracoid process while the arm was rotated, when crepitation was felt; the shoulder did not present that deformity described by authors as characteristic of fractures of the acromion and of the spine of the scapula. It was now inferred, either that the neck was fractured, or that the spine at its basis was completely separated from the body of the bone. The exact diagnosis was difficult, for the displacement was little marked, the fragments being retained in juxta-position by the muscles of the shoulder-joint which retain the head of the humerus in the glenoid cavity.

Authors generally agree that fractures of the scapula are always produced by the application of direct force. In the above case there was no trace of violence, no ecchymosis over the part, and, according to the patient's account, nothing had touched the shoulder. Muscular action must accordingly have caused the fracture.

ART. 57.—*Dislocation of the Head of the Tibia, forwards and upwards.* Anne Byrne, a healthy woman, æt. 35 years, admitted into the Richmond Hospital, June 21st, 1845, states that she was carrying a heavy load of metal on her back, when her right heel slid forwards rapidly, the knee at the same time being directed inwards, with a twisting motion: she fell to the ground, from which she was unable to rise; was immediately carried to the hospital, where the following observations were made by Dr. Hutton, under whose care she was admitted. The limb lay extended, and was an inch and a half shorter than the other; the foot was inverted, but not fixed in that position; the patella was pushed upwards, its inferior border being directed forwards, and its posterior surface downwards, resting on the articulating surface of the tibia: this could be distinctly felt when the patella was pressed to one side, which it was very easy to effect. A transverse sulcus bounded the patella superiorly. The anterior surface of the thigh was on a plane considerably behind that of the leg, which was twisted a little inwards; the condyles of the femur were distinctly felt posteriorly, particularly the outline of the external condyle; there was great laxity of the articulation, and lateral motion was easily produced to a considerable extent, particularly in an outward direction; the muscles on the anterior part of the thigh were quite relaxed, and the hamstring muscles could not have been tense as the limb lay extended, and there was little resistance to extension in a right line, so that the dislocation was reduced in a few seconds; the fibula maintained its connections with the tibia; there was no numbness of the leg, but the pulsation of the anterior tibial artery could not

be felt; it was, however, not very distinct in the uninjured limb. This accident seems to be of rare occurrence, and the symptoms of the luxation are not fully described, either by Sir Astley Cooper or Boyer, probably because the injury was deemed by them easy of recognition, and yet the description of this luxation, in the *Dictionnaire de Médecine*, is taken from an unreduced case, mistaken or overlooked by the attending surgeon. In this luxation, Boyer expresses his opinion that the lateral ligaments must be torn as well as the crucial and posterior ligaments of the joint; but in the case here related, lateral motion could not be communicated after the dislocation was reduced, which seems to prove that they could not have been ruptured, nor even stretched to any great extent. Some variety, however, is to be expected in injuries of this nature, according to the degree of force applied, its direction, and other circumstances.

*Dublin Journal*, July, 1845, p. 487.

ART. 58.—*On Staphylæmatoma*.\* Dr. Vitz has observed three cases of this disease of the palate, which has been called *hæmatoma palati*. It consists in the formation of one or several bladders, filled with fluid blood, and covered by the epithelium of the mucous membrane of the palate or uvula. If punctured, fluid blood is discharged. It causes no other inconvenience than a slight pain in swallowing or chewing, according to its situation. If not punctured, the contents are either absorbed or the tumor breaks, leaving a superficial, slightly painful ulcer, which heals in a few days. The causes are not known. One patient asserts that he has suffered from it once every year. A slight difficulty in eating sometimes precedes its appearance. It is about the size of a hazel-nut, and, in the cases observed, was always accompanied by aphonia, which was invariably cured by puncturing the tumor.

*Heidel. Annalen*, and *Med. Times*, July 14, 1845.

ART. 59.—*Calculi of the Nasal Fossæ*. By M. DEMARQUAY.

(*Annales de la Chirurgie*, July, 1845. Condensed in the *Lancet*, July 26.)

Calculi of the nasal fossæ, which Graaf calls rhinolithes, appear to have been first mentioned in 1502, by Jos. Mathias de Gardi. Cases of this disease have subsequently been given by Thomas Bartholin, 1654; Clander, 1685; Kern, 1700; Vitus Reidlins, 1706; Wepfer, 1727; Ruysch, 1733; Plater, 1736; Horn, 1788; Saviales, 1814; Graaf, 1828; Mr. Thouret, 1829; and Sir B. Brodie (*Lancet*, July 6), 1844. The cases quoted by these authors, M. Demarquay gives at length, and founds on them the following description of the disease:

Nasal calculi may exist alone, or in variable numbers. They may develop themselves on either side, and in the inferior or the superior regions of the nasal fossæ. It is, however, more especially in the inferior meatus that they appear to originate. They may be found in the frontal sinuses, or even in the maxillary sinus, and thence pass into the nasal fossæ. They may completely obstruct the cavities of the nose, incline the septum to one side, or even destroy it. Their volume varies from that of a pea to that of a pigeon's egg; their color is black, grey, or white; their surface is uneven, and their centre is often constituted by a foreign body, or by the root of an incisor tooth. They are formed of the elements which are found in the secretions of the nasal fossæ, and in the tears, viz., mucus, phosphate of lime, and the carbonates of lime and magnesia.

The causes which give rise to nasal calculi are obscure. Graaf attributes them to gout, but his own case is the only one in which the gouty diathesis existed. Chronic inflammation of the nasal fossæ, and of the lachrymal gland, appear the most probable causes of this affection. In many cases, the calculus appears to have formed round a foreign body. A cherry-stone, for instance, the root of a tooth, or some other substance. The presence of one or more calculi in the nasal fossæ occasions so little annoyance in some as to be scarcely perceived, whilst in other cases the symptoms may be sufficiently severe to necessitate surgical interference. The most frequent symptoms are, a certain degree of dryness in the affected nostril, accompanied by a sensation of obtusion and weight, and by difficulty of respiration. Sometimes there is acute

\* The name is taken from *Σταφύλη*, the uvula, and *αἷματωμα*, a blood tumor.

pain in the nose or forehead, of either a constant or intermitting nature. The inflammation of the surrounding parts may become severe, and give rise to an abundant fetid suppuration. The nose may become externally deformed. The eye may participate in the inflammation, or be bathed with tears, as in fistula lachrymalis. This is more especially the case when the calculi form in the inferior meatus. On dilating the nostrils, the foreign body is to be recognized. When this occurs a metallic sound, or the polypus forceps, should be introduced. The characteristic sound produced by their striking against the calculus will at once show what is the disease. If situated in the frontal sinuses, or very high in the nasal fossæ, they may not be recognizable by either of these modes of exploration. Calculi thus developed have often remained very long without being recognized. Sometimes they have been expelled in a fit of coughing, or sneezing, but they have generally been extracted by the hand of the surgeon. Nasal calculus has given rise to numerous errors of diagnosis, the symptoms which it produces having been attributed to ozæna, to disease of the bones of the nose, &c. Generally speaking, however, it is not difficult for a surgeon, who is aware of the existence of such a disease, to recognize its presence.

The first indication to fulfil in the treatment is the extraction of the calculus, an operation which it is not always easy to accomplish. The extraction may generally be effected with a pair of polypus forceps. It must, however, be done with care, owing to the inequality of surface which the calculi present. When the calculi have been removed, the surgeon must, by an appropriate treatment, combat the inflammatory symptoms to which they have given rise. Emollient and astringent injections are often very useful. If it is supposed that the presence of the calculi is connected with any general diathesis, this must be treated by appropriate remedies.

ART. 60.—*Cancer of the Anus.* By J. M. ARNOTT, Esq.

(*Condensed from the Medical Gazette, August 2, 1845, p. 713.*)

John Little, 61 years of age, for thirty years past a gardener, presented a tumor, the size of an orange, projecting at the anus, which might at first sight, from its form and seat, have been mistaken for a prolapsus ani.

The tumor was of a globular form, attached by a broad base, had an irregular surface of a greyish-yellow color generally, but in parts red, and secreting from the whole a very offensive discharge. The aperture of the anus, which was not at once discovered, occupied the most prominent part of the surface of the swelling, not exactly in the centre, though the whole contour of the opening was involved in the disease. Although the morbid mass extended under the surrounding skin, it was apparently so distinctly circumscribed and so moveable, as to lead to the inquiry if it might not be removed by operation. A very brief investigation of the case settled this question in the negative. On passing the finger into the bowel without pain or hindrance, although the mucous membrane was smooth and apparently unaffected, there was felt at the posterior part, about an inch and a half up, some irregularity in the subjacent tissue, and a hard nodule moveable under the finger. There were enlarged glands in both groins, and the patient had the true aspect of cancerous cachexia.

He represented the disease as having begun twelve months previously, as a small pimple on the verge of the anus; that it soon broke, discharged a little and healed; that it broke again and healed; and that this was repeated several times, whilst the part increased in size; that the swellings in the groin began four months ago, when the pain he felt therein, and the shooting pains in the anus, obliged him to give up work. His appetite was much impaired, he had sleepless nights, he gradually got more emaciated, and died in fourteen months from the commencement of the disease. Before death suppuration had taken place around the enlarged glands, with great aggravation of his sufferings. After death a firm medullary mass, the size of an egg, was found on the edge of the pelvis, two inches above Poupart's ligament, on the left side, and tubercles of the same character in the liver and both lungs.



ART. 61.—*Malformations and Congenital Diseases of the Organs of Sight.*

By W. R. WILDE, Esq.

(Dub. Journ., Sept., p. 81. Continued from Vol. I. of the Abstract, p. 115.)

**MALFORMATIONS OF THE CONJUNCTIVA.** 1. *Alterations in color.* The conjunctiva sometimes assumes uncommon hues. It has been observed of a deep blue tint in the white races. In one remarkable case it was black. *Nævi* have been observed to have their seat in the *conjunctiva bulbi*. A case is quoted from Von Ammon, which presented the characters of a simple ecchymosis in the centre, and of a vascular network round its margin. 2. *Morbid growths.* Tumors of various kinds, fatty and sarcomatous, with and without hair growing from their surface, are found upon the *conjunctiva bulbi*. Several have been recorded under the designation of *lipoma crinosum*, which most frequently occur over the junction of the cornea and sclerotica. Mr. Wardrop and others have given multiplied instances of locks of hair growing from the surface of the eye itself. These congenital morbid growths are frequently observed in the lower animals. 3. *Xeroma.* In a case of this affection described by Mr. Wardrop, the whole conjunctiva appeared to be converted into a thin dried bladder, sufficiently transparent to permit the sclerotica and cornea to shine through it, and to be distinguished from one another, but so opaque as to destroy vision. The conjunctiva palpebræ had the same shrivelled appearance, there was a deficiency in the prolongation of the membrane, and the eyelids adhered to the globe so that they could neither be separated far from it, nor could the edges of the eyelids be brought sufficiently together to cover the eyeball, apparently the result of some adhesive inflammatory action between the lids and the globe going on *in utero*. The openings of the lachrymal glands were obliterated, and the eye completely deprived of tears.

**ALTERATIONS IN THE STRUCTURE, SIZE, AND SHAPE OF THE CORNEA.** The cornea alone may be altered in transparency, thickness, size, form, and curvature, but its malformations seldom occur singly; they are generally in connection with microphthalmus, and often with defects of the iris and pupil, yet the congenital defects of this part more nearly resemble those which occur from accident in after-life, than the affections of any other structure of the eye.

1. *Opacities.* Sclerophthalmus is the term given by Keiser to congenital opacities of the cornea, resembling in characters—leucoma,—when found occupying the periphery, making it look as if the sclerotica had partially grown over and dimmed its surface. A knowledge that the transparency of the cornea commences at its central part, and proceeds gradually to its sclerotic border, tells why the arrest occupies the situation it usually does. Two forms of opacity present at birth, differing not in intensity, but in appearance, from the difference of their causes. The true congenital opacity is the result of an arrest of development from the time the cornea had a pearl-colored aspect, which is retained wholly or in part at birth, and appears to depend upon an interstitial deposit between the laminae; which deposit may be absorbed after birth. Numerous cases are referred to, in which the subjects were blind at birth, but ultimately recovered their sight. The practitioner should be well acquainted with this form, as in such a case his prognosis may in general be favorable.

Sometimes an opaque ring, exactly resembling the *arcus senilis*, is observed at birth. It may be called *annulus juvenilis*. It may be distinguished from microcornea by the remains of the general congenital opacity, by the overlapping of the sclerotica, by its defined edge, and by a diaphanous ring external to the opaque one. Von Ammon's observations lead to the conclusion that these corneal defects are hereditary.

*Megalacornea.* A total darkening of the cornea, not the result of evident inflammatory action and disease *in utero*, has been described by Farrar, Walker, Ware, Von Ammon, and others. Sometimes the entire cornea is opaque, and of a whitish, pearl color, polished like a mirror, vaulted, apparently hypertrophied, and approaching a staphylomatous character, giving the entire bulb a more globular form. A remarkable case is quoted from Ammon, which partially cleared by the fourth year after birth. Farrar published three cases. Two of them cleared perfectly in less than a twelve-month. The third was only partially recovered at the end of two years. In the last case there was a congenital pterygium.

*Cornea globosa.* Here the insertion of the cornea into the sclerotica is round and

defined, but the cornea itself is larger, and more vaulted than natural, giving to the eye that peculiar glancing, metallic appearance observed in the *staphyloma pellucida*, a disease with which it has frequently been confounded. There is a second form of congenital opacity obviously caused by disease *in utero*, in which inflammation and its results take place as in ordinary uterine ophthalmia. The disease may run through its entire course previous to birth, and produce ulceration, sloughing of the cornea, prolapsus iridis, synechia, or staphyloma. Several most interesting cases are quoted. In one, a child was born with synechia anterior; and two brothers, in Manchester, were born with their right eyes staphylomatous.

*Microcornea.* A diminutive size of the cornea with a natural sized globe. The case of a child eleven years old is given, who was born with this affection at the seventh month. It gives the eye a wide, staring appearance, owing to the cornea allowing the white sclerotica to appear above and below their circumferences, whereas in the natural eye the upper lid overhangs the edge of the cornea, and the lower slightly envelopes its inferior margin. There are other peculiarities about the eyes, with very severe myopia. In most cases of this peculiarity the cornea is either oval or of a very irregular shape, looking as if the sclerotica grew in or over it, and it has to be remembered that it is only in the third month of utero-gestation that the distinction between the cornea and sclerotica is completed.

3. *Cornea Conica.* Known under the terms, *hyperkeratosis*, *ochlodes*, *staphyloma pellucida*, *conical cornea*, &c.: consists in a conical projection of the cornea; generally in the centre, but sometimes at one side, while its transparency remains unaffected. At times congenital. It increases after birth. Observed by Von Ammon in three sisters of the same family. The circumference of the cornea remains in its natural state, but the apex has become thinned, appearing as if the laminated cornea had given way, allowing the elastic remainder to bulge out through its layers. In some cases there is also an opacity at its apex, supposed by some writers to be caused by its rubbing against the upper lid. Some have asserted that it occurs congenitally in conjunction with a peculiar sugar-loaf form of head, and it is remarkable that in China, where this form of head prevails, a great number of cases of conical cornea occur. It differs from cornea globosa in the latter not being conical, and having no central opacity; besides, in this, the cornea is said to be peculiarly thickened throughout. Both in cornea globosa and conical cornea, when they occur as a sequel to inflammation, the sclerotica is often implicated, the abnormal curvature commencing in the sclerotica; in the true congenital disease the sclerotica is unaffected.

4. *Cylindrical Cornea.* The curvature of the horizontal plane being naturally less than that of the vertical plane of the cornea, this term may be applied when this exceeds the usual extent. Mr. W. Jones called it "the cylindrical eye." It gives rise to irregular refraction, causing a circle to appear an oval, a point a line, &c.; in fact, lengthening out an object in one direction, and compressing it in another.

5. *Plurality of Cornea.* Thus, it is sometimes double, as occurs in *monoculi*.

6. *Absence of the Cornea.* Himley gives a case of microphthalmus, in which the bluish sclerotica passed over the place of the cornea, in the same form and curvature as the rest of the globe. It was true sclerotica, and not opaque cornea. Other instances have been related.

The author brings forward some further most interesting cases, demonstrative of microphthalmia being sometimes an hereditary affection. A man, living in the neighborhood of Saverne, lost his right eye by accident. His daughter was born with microphthalmus of the left eye. She had two sons; the elder born with this vice of conformation in both eyes, and the younger in but one only, the right. A woman, whose eyes were quite perfect, but whose mother had microphthalmus, married a man whose grandmother was deaf and dumb. She had three boys and two girls. The girls were both affected with microphthalmia, one of them was deaf and dumb, and had moreover complete absence of the iris in one eye; the other has had a child deaf and dumb, and has also microphthalmus and coloboma iridis.

The author records a remarkable case which has recently come under his own observation of microphthalmia, attended with coloboma iridis, convergent strabismus, and nystagmus. The left eye is a little more than half its natural size, but the right somewhat larger.

[We regret that our space will not allow of a more lengthened abstract of these most interesting and highly important papers.]

ART. 62.—*Lachrymal Calculus.* By Professor SYME. A farmer, 37 years of age, applied on the 28th of August, on account of an obstruction in the lachrymal passage. He stated, that between four and five years ago, he had let a little lime get into the eye, and in consequence suffered some uneasiness, which did not afterwards completely subside. Various ointments and other applications having been tried, without affording any relief, his mind was at length made up to suffer any operation that seemed requisite, under the impression that his complaint depended upon obstruction of the tears.

There was considerable swelling and redness at the inner angle of the eye, and when pressure was applied here, a discharge of turbid fluid from the lower punctum. On more careful examination, it appeared that the swelling was not in the situation of the lachrymal sac, but rather in the duct leading to it from the inferior punctum; and Professor Syme also ascertained, by passing a probe from the nostril upwards, that the nasal duct was perfectly free. He therefore introduced a gold probe into the inferior punctum, and immediately detected a concretion, which was readily extracted after the orifice and adjoining part of the sac into which the duct was dilated had been opened sufficiently by fine-pointed scissors. It was about the size of a barley-pickle, of an irregular form, with tuberculated surface, and of a dark brown color, so as very much to resemble a mulberry calculus in miniature.

This case is the only one of the kind that has fallen under Mr. Syme's notice.

(*Monthly Journal of Medical Science*, October, 1845.)

ART. 63.—*Inflammation of the Spinal Chord from Injury to the Vertebra.* By THOMAS INMAN, M.D. A. B., a porter, aged 45, fell backwards against a wall, from a ladder, striking his head in its descent.

Immediately after the fall he was completely paralysed, respiration being carried on by the diaphragm alone; his senses were unaffected; no particular pain was complained of; fracture was suspected, but no manipulation was resorted to for fear of increasing the mischief. The next day he was able to move his arms a little, and two days after could move his legs. On the third day the arms began to twitch, and continued in a state of tonic contraction; some power of motion remained in the legs till the sixth day, when the paralysis was complete. There was never any sensation in the lower, and very little in the upper extremities. Dull aching pain was complained of in the neck. A large slough rapidly formed on the sacrum, and death ensued on the tenth day after the accident.

Post-mortem examination revealed a fracture through the body of the seventh cervical vertebra passing obliquely, and partly through the intervertebral cartilage between this and the first dorsal. The *dura mater* of the chord was lacerated at this point to a small extent, but no effusion of blood had taken place. With this exception, all the membranes looked perfectly healthy. On examining the chord, however, an appearance was noticed anteriorly, like an ecchymosis, and on making the incision at this part, the medulla was found reduced to a brownish pulp. A stream of water being gently turned upon this, washed away the softened portion, leaving a cavity large enough to hold three peas. Its situation corresponded to the giving off of the lower nerves going to form the brachial plexus. The chord was healthy in every other part.

The other viscera were examined, but presented no remarkable appearances.

*Report of the Liverpool Pathological Society.*

*Edinb. Med. and Surg. Journal*, Oct., 1845.

ART. 64.—*Imperforate Anus with absence of the Rectum and Colon.* By Dr. LEHMANN.

(*Medicinische Verein. Zeitung. Lancet*, Aug. 16.)

The author was called to a child who had been born five days, and who up to that time had passed nothing from its bowels. It was a boy of mature but weak development. From the account of the mother, vomiting of a thickish green fluid had occurred several times. The raphe of the scrotum was continued to the point of the os coccygis, and in its centre, in the place where the anal opening is usually found, were two strong folds of skin united together. The abdomen was distended, and hard, like a drum, and the windings of the small intestines were visible below the skin. A puncture an inch deep was made between the folds, with a lancet, and kept open with

charpie; the following day a trocar was introduced, to the depth of two inches. It seemed by the sensation communicated, that the instrument had been pushed into an empty space. No fæces came away, and the child died on the day after, the seventh from birth.

On opening the body, the small intestines were found distended with gas, and in many places filled with meconium, and with yellowish-colored fæces. The colon and rectum were altogether absent. The ilium went to the place where the colon should have commenced, and there terminated in a blind sac, distended with meconium. There was no communication between the sac and the neck of the bladder. The puncture had perforated the cavity of the abdomen, without reaching the blind sac.

ART. 65.—*Rupture of the Tendon of the Triceps Cruralis on both sides.* But few examples of a rupture of this strong tendon have been recorded, more especially of its occurrence in both limbs. In two cases cited by Ruysch the accident was produced by the patients falling upon their knees, the legs being violently flexed on the thighs. In a case by J. L. Petit, the rupture occurred in attempting to jump a ditch. In another case it is said to have been produced by falling upon the knee in descending a ladder, and that the fall on the knee produced the rupture; but when the knee struck the ground the rupture must have already taken place, or it could not then have happened—the ground necessarily limiting the extension. In a case by Sancerotti, a heavy subject slid down the sides of a ladder, and fell with his two legs folded under him; he partially ruptured the tendon of the patella in the left leg and completely in the right leg. In a case by Boyer, the patient lost his equilibrium while skating, and was in danger of falling backwards; in the effort made to throw his body forwards, he broke the tendon of the extensor muscle of the right leg. In a case by Dupuytren, in consequence of a sudden and violent curve of the trunk backwards,—in one case by drawing the foot out of a hole,—in another by wrestling,—in another by falling forwards from a ladder: and in various other ways this accident is said to have occurred. In a case lately treated in the Hôtel Dieu, at Paris, under M. Roux, the accident occurred to a young man descending a ladder. He had high-heeled boots. Being caught in one of the steps of the ladder by his heel, he instinctively threw himself backwards to prevent his body falling forwards, and in this violent effort the ligament of the patella was ruptured in both legs. He distinctly heard a snap on the right but not on the left side.

"It is during the contraction of the muscle on which it depends," remarks Delpech, "that a tendon may be ruptured. It appears to the contrary, that it is during the action of their antagonists, or of a new force opposed, that muscles are torn." (*Maladies Reportées Chirurgicales*, t. 1, p. 184, et s.) M. Malgaigne also maintains that "when a sudden force tends to elongate the muscles at the period of a powerful contraction, the tendon snaps. The rupture of a muscle takes place only when the muscle is stretched or elongated, the rupture of a tendon only when the muscle is contracted and shortened."

This appears to be the surgical doctrine, but in the above case the triceps cruralis could not be contracted while the trunk was powerfully curved backwards to prevent a fall forwards, and the same remark may be made respecting Sancerotti's case, who fell with the triceps extended to the uttermost. It was, also, while throwing himself backwards to avoid a fall forwards, that Dupuytren's patient ruptured the tendon in question. In some of the cases, it appears that Delpech's doctrine holds good, as in Boyer's case above referred to, although it is difficult to understand the rupture taking place at the fixed point, since to maintain the position of the trunk, the muscle must have had its fixed point below, and we should rather expect the accident would take place at its superior insertion, that is to say, at the point of resistance.

The case was treated by placing the two limbs extended on a plane inclined from the feet to the pelvis, and maintaining them with a posterior splint and bandage in a state of permanent extension. The accident cannot be regarded as trivial, since, of fourteen cases referred to in a memoir by Demarquay, five only were understood as having had a completely favorable result.

*Gazette des Hôpitaux*, June 14, 1845.

**ART. 66.—Dislocation of the Sternal end of the Clavicle, backwards.**

By WILLIAM BROWN, Esq., Callington.

*(The Medical Gazette, Aug. 1, 1845.)*

On the 2d instant a well known Cornish wrestler, commonly called the "Little Roper," was brought to us (Dr. Hender and myself) with an injury sustained in the ring. He had been thrown to, or rather upon, the left shoulder, so that this was forced forwards. The great force of the fall was assisted by the weight of the other wrestler coming down upon him. Instead of the clavicle giving way in its outer curvature, as one would have expected, the sternal end of the bone was completely driven backwards. There was much pain, with some embarrassment of breathing. The case being clear, the plan of treatment adopted was the method of Desault, as modified and practised at University College Hospital, for fractured clavicles; that is, the reduction, and keeping of the parts in place, having to be effected indirectly, the limb was put up with the wedge-shaped pad in the axilla; the elbow, in order to be made to act as the lever, being fastened to the side by means of a roller passing alternately round the body, and over the right shoulder. Thus the elbow was supported, and the fore-arm fixed upon the breast, whereby the shoulder was well kept back in addition to the primary object being obtained, of confining the elbow to the side, and so making the pad effective as a fulcrum.

Perhaps one reason why the articulation instead of the bone gave way was, that though wide, he was still very flat in the chest.

**SECT. III. THE TREATMENT OF SURGICAL DISEASES.****ART. 67.—Recto-Vaginal Fistula successfully treated by a new Operation.**

By M. JOBERT, Hôpital St. Louis.

*(Gazette des Hôpitaux, Août 7, 1845.)*

Marie Calmès, aged 26 years, of a good constitution, and in perfect health, became pregnant for the first time towards the end of 1840. Nothing particular occurred during the pregnancy; she was twelve hours in labor, the head presented, and was very large, but delivery took place without the aid of instruments. The child lived only twenty-four hours.

Nothing particular occurred during the first four days after delivery, but on the fifth day the patient found that she could not retain her urine; that it did not pass by the natural passage, but continually flowed per stillicidium through the vagina. She continued in this state a month, when, finding that she was continually wetted by the flow of urine, she became a patient of the late M. Breschet, at the Hôtel Dieu. She left this in about a month, went to her family for a year, then entered La Charité, under M. Velpeaux, where she remained three months, and from this time the disease was regarded as incurable.

In October, 1843, ten months after leaving La Charité, she was admitted into St. Louis, under M. Jobert. At this time the greater part of the vesico-vaginal parietes, and the inferior parietes of the urethra and of the neck of the bladder, were destroyed. Six weeks after her admission M. Jobert resorted to the operation of elytroplasty, and a large flap was taken from the right nates. The flap mortified, and, after the lapse of five months, the patient left the hospital unrelieved.

In March, 1845, she was again admitted, having begged of M. Jobert to try another operation to relieve her from a complaint which rendered her life insupportable.

Upon this occasion, in order that there might be a fixed point forwards, and to meet the necessity of applying sutures, M. Jobert in the first place directed his attention to the restoration of the inferior parietes of the urethra and the neck of the bladder. The operation for this purpose succeeded in part, and he thus obtained in the centre of the

normal urethra a kind of band, about two thirds of an inch wide, extending from one nymphæ to the other, simulating sufficiently well the original urethra. Below this band there was an orifice, representing the anterior orifice of the urethra, through which a female catheter could be easily passed. The urethra was truly formed anew, although of no service.

The patient's state was brought to this—in consequence of delivery, and four years afterwards, she was affected with a vesico-vaginal fistula, situated in the median line directed from behind forwards, parallel to the great axis of the vagina, and of an elliptical shape. It commenced at one centimeter and a half (0.589) from the cervix uteri, and terminated at the restored urethra. It involved the urethra, the neck of the bladder, and nearly the whole length of the vesico-vaginal septum; its transverse was less than its antero-posterior diameter, and it readily admitted the introduction of three fingers into the bladder. The edges, although thick and irregular, were not indurated, and there were no calcareous incrustations. There were neither adhesions nor contraction of the vagina, the interior of the bladder was smooth, its capacity was not diminished, its anterior extremity had no tendency to prolapse into the vagina, and it contained no calculi. Her general state of health was quite satisfactory, and she was most anxious to be operated upon.

M. Jobert, seeing that the elytrorplastic operation could not succeed where there was so great a loss of substance, determined upon the plan of: 1. Elongating as much as possible the portion of the vesico-vaginal septum which was continuous with the anterior part of the cervix uteri, by drawing it from behind forwards, and from above downwards, in order to diminish the loss of continuity in the antero-posterior direction. 2. Bringing together the sides of the vesico-vaginal opening towards the median line, down to the commencement of the new urethra already described. This operation was performed on the 9th of June, 1845, in the following manner:

The patient was laid on her back in the lithotomy position, the pelvis was brought to the edge of the bed, so that the perinæum projected a little forwards, the thighs half flexed upon the pelvis were opened wide, and supported by two assistants, who at the same time separated the labia. Museux's forceps were inserted into the neck of the uterus to draw the uterus downwards and forwards to the inferior orifice of the vagina. A transverse semicircular incision was then made above the anterior lip of the os uteri, in the sulcus which the anterior parietes of the vagina forms where it is inserted on the cervix uteri; then conducting the blade of the bistoury from below upwards (the uterus being held down), or rather from the cervix uteri towards the posterior part, that part of the vesico-vaginal septum which remained, and which, as above stated, was a centimetre and a half in size, was in part detached. On drawing forwards the portion of the parietes thus dissected off, it was found to diminish the size of the antero-posterior diameter of the fistula very considerably.

The edges of the fistula were then pared off with the bistoury through the whole circumference, they were then easily brought together and maintained in position by several sutures. In this manner the opening was closed by what remained of the vesico-vaginal parietes itself; on the one hand by drawing its parts together laterally, and on the other by making a portion slide from behind forwards after a previous dissection; this latter part of the operation induced the author to call it *autoplastic union by the sliding process*. The vast loss of substance was thus repaired. The bladder and vagina, which previously formed one vast cloaca, now constituted two perfectly distinct cavities. A piece of agaric smeared with ointment was applied to the anterior parietes of the vagina, and the latter moderately plugged with charpie; then a gum-elastic catheter was introduced into the bladder by the new urethra, and allowed to remain, to prevent the urine accumulating in the bladder, or extravasating over the wound.

June 11th. No unfavorable symptoms had occurred, and there was but slight fever. Menstruation took place. 12th. A small quantity of urine appeared to flow through the anterior part of the wound behind the urethra. M. Jobert was fearful that the catheter, although still necessary, might destroy the newly-formed urethra. 14th. The urethral canal gave way, still the urine flowed by the catheter. 28th. The patient rose from her bed.

July 15th. M. Joubert examined the patient and found her in the following state: 1. At the bottom of the vagina the cervix uteri. 2. In front of the cervix, and at the superior part of the anterior parietes of the vagina, or rather of the vesico-vaginal sep-

tum, a well-marked projection, formed by the flap, which had been detached from the neighboring parts. 3. More anteriorly, the *thick and solid cicatrix*, forming a *sulcus*, directed from behind forwards, indicating the place of union of the two edges of the fistula. 4. In front of this sulcus, as high up as the normal neck of the bladder, the *artificial neck*, and a *depression*, formed by an opening which a female catheter could pass through, and which allowed of the passage of the urine; it was the vesical orifice of the newly-formed parts. A catheter introduced into the bladder might be passed to a considerable distance, and freely moved about, proving that the capacity of the bladder was not diminished. The patient was able to retain her urine for several hours, and to void it voluntarily. She retained it on walking, but less completely than under other circumstances; and, lastly, although no urethra exists, the urine does not fall either into the vagina or on the labiæ, but escapes in a stream through the artificial neck of the bladder. The case was subsequently examined, and the parts found to be still in the satisfactory state above described.

Striking analogies and differences exist between autoplasmic union by the sliding process and elytoplasty. In the latter the flap is taken from the exterior; in the former it is taken from the interior of the vagina itself: in the one it is a flap of skin applied to the vesico-vaginal sulcus; in the other it is a portion of the parietes brought into contact with the parietes itself: in the latter there is the same structure, the same vitality of tissue; in the former the structure and vitality of the tissues are different.

Before operating, M. Jobert made experiments on the dead body to ascertain the exact relations of the peritoneum reflected from the posterior surface of the bladder over the anterior surface of the uterus, to the sulcus or cul-de-sac, which the superior extremity of the vagina forms round the os uteri. After making an incision through the mucous and dartoid tissue which constitutes the vagina, a dense cellular tissue is found uniting the fundus of the bladder to the vagina; somewhat higher, a lax cellular tissue, which allows the bladder to be pushed forwards, and the operator to get a considerable distance upwards, between it and the uterus, without danger of wounding the peritoneum. The cul-de-sac of the peritoneum is not ten lines, as has been said, but more than fifteen lines, from the cul-de-sac of the vagina.

ART. 68.—*Treatment of Seminal Losses by Compression.* By M. BRACHET (de Lyon).

(*Bulletin des Académies*, Juin, 1845.)

The author cites four cases of spermatorrhœa, arising from different causes, all of which were cured in from two to three months by compression in the perineum over the prostate gland. He admits that compression is not applicable to all cases, and that avoidance of the cause of this disease is for the most part sufficient for the cure; but he thinks that it will succeed in every case of atony occasioned by abuse, or even by protracted or frequently repeated attacks of gonorrhœa. He endeavors to show that the injurious influence of the complaint results from the nature of the seminal fluid, the too frequent discharge of which cannot take place with impunity. He further attributes a part of the injurious effects to the too abundant secretion of prostatic fluid; and, comparing this fluid with that secreted by the cryptæ of the vagina at the moment of coitus, and in certain cases of leucorrhœa, he establishes an analogy which must exist between those isolated cryptæ in the vagina, and those which constitute the prostate. He then gives a satisfactory explanation of the manner in which compression acts. It produces two effects—on the one hand, it confines the semen in its reservoirs, and accustoms them to tolerate its presence better, and to retain it longer; on the other hand, it modifies the physiological condition of the urethra, of the prostate, and of the excretory organs of the semen. The cure is attributable to this double effect. By modifying the pathological state of the affected parts they are reinstated in their normal condition.

The compressing bandage is formed of a leather belt, from behind which proceeds a thigh strap, at first simple and then bifurcated, to leave the genital organs free, and to be brought round and attached to the belt by two buckles with thongs. The thigh strap has a moveable pad in the middle, which is placed over the point to be compressed and drawn as tight as possible. This simple method differs essentially from the circular compression of the penis by rings, bands, or forceps, all of which are liable to serious accident; the least of which is the repulsion of the semen towards the bladder, which

occasions an illusory appearance of a cure, since, although the semen does not pass outward, it is not the less certainly evacuated; that is to say, expelled from its reservoirs. M. Brachet brought the above-mentioned cases before the Academy in order that practitioners may determine the real value of the remedy.\*

ART. 69.—*Ligature, Incision, and Cauterization of a Nævus on the Superior Lip of an Infant. Cure.* By M. BARNETCHE, Bordeaux.

(*Annales de Thérapeutique*, Mai; and *Lond. and Edin. Journal*, July, 1845.)

The nævus occupied the whole upper lip of a child twenty-two months old, and was increasing rapidly. The labial arteries were previously tied on a level with the commissures. The patient being secured, M. Costes seized the upper lip, and turning it out, M. Barnetche passed a curved needle armed with thread under the arteries, and succeeded, with difficulty, in applying the ligature. An incision was then carried along the lip, and a considerable mass of erectile tumor seized with a pair of forceps, and cut out with the bistoury. A "sheet" of blood immediately followed. The attempt to stop it by cauterization with acid nitrate of mercury was vain. "A crimson jet of blood projected to a great distance could not thus be stopped;" the child was pale and syncope impending. The actual cautery was applied, and by its means the hemorrhage was controlled. The ligatures were detached on the fifth day, and the eschars on the seventh. On the eighth day there was a recurrence of hemorrhage, which was again arrested by the actual cautery. From that period the lip became indurated, the pulsation which ceased at the time of the first operation did not return, the color of the lip remained normal, and the cure was complete, except that eight months after the operation there was a slight line of a reddish color, extended to the left nasal fossa, regarding which there was some anxiety lest its having been left behind should prove a cause of regret.

ART. 70.—*A new mode of applying Ligatures to Nævi.* Mr. Christopherson advises the following modification of the usual method of performing this operation. The plan, which is sufficiently simple, is thus described: "Take a piece of strong silk or ligature, well waxed, and three quarters of a yard in length. Thread a curved needle with the same, leaving the ends equal, and pass it double under the centre of the part requiring to be removed. This done, cut the ligature in the middle, leaving the needle attached to the inferior portion, which is then passed through the skin immediately below the part to be strangulated. Thread the needle with the superior portion of the ligature, and pass it through the skin in an opposite direction, immediately above the part to be strangulated, and remove the needle." In the next place "tie as tightly as possible the two ends of the loop which includes the inferior half of the tumor, and strangulate that portion of the part to be removed. The four ends of the ligature remaining are now to be tied tightly and alternately, the one to the other, and the operation is complete. The whole mass being thus enclosed in a double circle by the ligature, both within and without, must be effectually strangulated."

The advantages said to be possessed by this method are: That it is simple and quickly performed; that it leaves less deformity than the common method; that it can be applied in situations in which other means cannot be conveniently employed; and thus the strangulation must necessarily be complete.

*Lancet*, June 14, 1845.

ART. 71.—*On the Treatment of Venereal Vegetations.* M. Vidal de Cassis observes, "that there are few surgeons who have not experienced disappointment in the treatment of these vegetations. Dissatisfied with the usual means of curing them, as excision, cauterization, and ligature, he was led to the adoption of a powder composed of equal parts of burnt alum and powdered savine; the efficacy of this application is stated to be very great, the vegetations drying and shrivelling up speedily. Two applications in the day are sufficient.

*Annales de la Chirurgie*, Mai, 1845.

\* *Annales de la Chirurgie*, Juin, 1845.



ART. 72.—Case of *Œsophagotomy*. By DR. MARTINI.

(*Wurtember. Medicinisches Correspondenzblatt. Medical Times*, June, 14; *Gazette Médicale*, May 31, 1845.)

N. swallowed a large piece of bone during dinner (19th Feb., at noon). It produced impending suffocation and other violent symptoms. Notwithstanding repeated venesections, the bone could not be pushed into the stomach, although more than sixty attempts were made. After the injection of clysters of belladonna, attempts were also made to abstract it with levers and forceps, but without success. Injections of tartar emetic, and *œsophagotomy* were both strongly objected to by the patient, who could only obtain relief by occasional injections of oil. The patient could not swallow a drop of water. On the 23d of February, the pain was so excruciating, that he declared himself ready to submit to any measure that might be advised. Tartar emetic was then injected into a vein, at about eight o'clock, A.M.; this excited such powerful vomiting, that clysters of water, vinegar, and, at last, of tincture of opium, became necessary. At four o'clock, P.M., *œsophagotomy* was performed. The bone being felt from without, above the clavicle, the throat was opened in that situation, and, even during the performance of the operation, it was swallowed by the patient (a sign that he might have been saved, if it had been performed earlier). The operation was successfully terminated, a bandage applied, and cold water, with solution of lead, continually applied over the wound. On the 24th, he was very feverish, the next day the extremities became cold. On the 26th, at two, A.M., there was singultus, and at six, A.M., the patient's sufferings were terminated by death. The *autopsy* showed that the upper and middle parts of the pharynx were gangrenous, and the opening larger than it had been made by the knife. The lower end of the pharynx, the stomach, and duodenum were inflamed. The bone was already near the rectum.

[The reporter in the *Gazette Médicale* observes, that the gangrene was probably produced by the foreign body, and by the numerous efforts made to displace it; and that the case is interesting on account of the means adopted to excite vomiting.]

ART. 73.—*Tumors of the Pharynx and their Treatment*. By J. M. ARNOTT, Esq.

(Condensed from the *Medical Gazette*, July 21st, 1845.)

1. *Pedicated Tumor*. Anne Gilbert, aged 19, presented herself ten days ago, speaking through her nose and inarticulately, and complaining of great difficulty of swallowing from "a lump in her throat," which had been noticed for three months, although the imperfection of speech and deglutition had existed for a longer period. The patient was thin, but externally there was no appearance of swelling. Behind the isthmus faucium, amidst a quantity of froth and ropy mucus, a tumor of a rounded form was seen rising apparently from below, filling the upper part of the pharynx, and projecting slightly forwards between the arches of the palate. The color of the tumor was that of the surrounding parts, but its surface was rough and irregular. The finger carried over the root of the tongue could be passed between the tumor and the entrance of the glottis, and a probe could be carried laterally round all that part which was visible, and also superiorly; its connection posteriorly and inferiorly could not be positively determined; but, from a certain amount of mobility under the finger it appeared that it was attached by a pedicle, and not by a broad base, and probably to the posterior part of the pharynx below the level of the sight.

Mr. Arnott applied a ligature by means of the common uterine polypus tube. A running noose was made of a size to pass over the swelling, and the ends of the thread passed through the tubes; the loop was carried with some little difficulty on the most prominent part of the tumor, and the ends being drawn, the noose slipped over to its base. Being tightened, and a second knot tied, the mass acquired a livid color, showing it was probably strangulated; but in a few seconds it appeared not quite so dark, and another ligature was easily applied. The tumor was very moveable, had a globular form, and was now twisted off. No bleeding followed.

It was the size of a green walnut, attached by a narrow pedicle, and had an irregular surface, not unlike that of a mulberry greatly magnified, with this difference, that some of the elevations were pediculated. The appearance of a section of the mass

presented a singular contrast—that of a firm fleshy substance, of one uniform character, without the least appearance of fibre, cell, or deposit intermixed. In consistence and color it corresponded with what has been called albuminous sarcoma. Minute blood-vessels were seen ramifying in the uniform and solid tissue.

Under Mr. Tulk's microscope, it seemed made up of caudate-nucleated cells, and its surface was covered with a thin layer of epithelial cells.

2. *Broad-based Tumor of the Pharynx.* Anne Parker had a tumor, five years ago, of globular shape, seated on the left side of the fauces, projecting two thirds across the isthmus, and carrying the uvula before it, bounded by the anterior arch of the palate in front, nearly touching the posterior parietes of the pharynx (which it half filled) behind, and descending inferiorly into this cavity below the level of the root of the tongue, when depressed by a spatula. The tumor was covered by mucous membrane of natural appearance; it had a smooth surface, and felt firm to the touch. The base was broad, and its attachments firm; it was immovable. Its greatest diameter was from above downwards, in which direction it measured two inches. No trace of the tonsil or posterior arch of the palate on this side could be seen. The latter was effaced by the distension of the tumor, which no doubt spread over its surface. Pressure gave no pain.

It produced a very uneasy feeling of suffocation and dyspnoea, which was worse at night, or when her head was low. Sometimes she had spasmodic attacks about the throat, so as to compel her to get up and walk about. These became worse, and were relieved by medicine; they were sometimes produced by swallowing. She was able to swallow liquid and small masses of soft food without difficulty. She had much discharge of saliva, and always "feels a desire to spit up mucus, but cannot." Her health was tolerably good, but she was very low-spirited. The tumor had increased more rapidly since her last confinement. About a year and a half previously she first perceived a small hard swelling, about the size of a hazel-nut. Her attention was directed to it by a suffocating feel in the night. A month before this she met with a blow from a man's fist on the left side of the jaw, and she felt pain till the swelling began, and some time afterwards. She was then made an out-patient at St. Thomas's, under Mr. Green, who lanced it, and let out some thick black blood. It was blistered, and her mouth was made sore by mercury, and the sub-lingual glands then became enlarged, but soon subsided again. It gradually increased in size, and the symptoms became worse.

Believing the disease to be malignant, Mr. Arnott at first determined not to meddle with the tumor, but such severe spasmodic attacks came on, with dread of immediate suffocation, that she begged to have something done to relieve her at all risks.

The patient was placed on a chair opposite a window, and her head supported by assistants. The mucous membrane was divided freely over the surface of the tumor, and the muscular fibres exposed. These were next divided, and a semi-transparent spot was seen, which was found to be a very small cyst, containing some serum. The mass of the tumor being slightly cut into, was found solid, as was expected, and bled freely. The finger was now passed round the tumor, inside a cellular coat or cyst which embraced it, so as to expose its neck, which was very thick, and fixed; a ligature was then passed round it and tied, but the substance of the tumor broke down under it, and portions of it came away, having the appearance of white fibrin. Another ligature was then passed closer to the base than the first, but this also cutting its way through the mass, was tied, and the ligature left on. Under this there was some bleeding, but not to any extent.

The case progressed favorably. The patient had restless nights for some time, requiring muriate of morphine. There was much sloughing, and Mr. Arnott removed several mortifying pieces; diluted nitric acid was applied; the ligature came away on the sixth day; after this she began to swallow and to speak better; ultimately healthy granulations formed, and the patient recovered.

In performing the operation care was taken to have the actual cautery in readiness, as the only favorable means of arresting hemorrhage should it occur. Mr. Arnott remarks, that in this case—a tumor of very unfavorable appearance, and awkwardly situated,—the life of the patient had been prolonged already for five years, by an operation not of the most satisfactory nature, although the best that the nature of the case allowed of. This tumor also was one of albuminous sarcoma.

ART. 74.—*Practical Observations on the Operations for cleft Palate.*

By Professor DIEFFENBACH.\*

(Dublin Journal, Nov., 1845.)

This beautiful, ingenious, and skilful operation, which consists in bringing together the wounds formed artificially in the borders of the cleft palate, and uniting them by means of sutures, owes its invention to Von Gräfe, who practised it successfully for the first time in 1816. After him Roux was the first who repeated the operation, and many surgeons have since that exercised themselves in the same field—Chelius, V. Ammon, Baum, Philipps, Ebel, &c.; and I have been also successful in many cases in removing, by my own methods, the most complicated cases of this nature, as well as bringing the operation into more general use, and rendering its results more fortunate and sure.

The principal object of the operation is to improve the speech; any defect or split in the palate, whether in the margin or on the middle of it, as well as when there is an aperture in the hard palate, causes an impediment in the speech, and a particular snuffing, inharmonious sound. When the defects or splits are greater, and stretch over the whole palate, the speech becomes entirely unintelligible, and the sound of the voice a continual unmodulated noise, a guttural hissing through the throat and nasal fossa; and when the cavities of the mouth and nose are not separated, there is, in speaking, a continued and free emission of the breath. The second inconvenience connected with the division of the palate is the difficulty of swallowing food, especially liquids, which frequently escape upwards through the nose. In the case of double hare-lip (*Hasenscharte* and *Wolfsrachen*), with projection of the inner-maxillary bone in the shape of a truncated knob, there is, on account of the separation of the superior maxillary bones and the palate bone, a deep slit dividing the palate and uvula, which forms both its ends, as the extreme points of the cleft. This is the highest degree of this congenital defect which is connected with hare-lip; but sometimes it occurs without any division of the lip.

Observation shows us the following degrees: the least is where the uvula (*Zäpfchen*) is altogether or partially divided, or where the slit extends more or less into the soft palate, so that it is cleft one half or more, or altogether, as far as the palate bone. If it extends further, the palate bones are separated posteriorly either partially or altogether, or even to the edge of the alveoli; and the lip is either entire or is singly or doubly divided, on one side, together with the bones of that side, while on the other a slit exists in the lip, unattended by separation of the alveoli.

Another direction of this deformity is where it is turned outwards; the lip is divided either like a single or double hare-lip, or the slit extends to the alveolar process on one or both sides, and then approaches the place where the inter-maxillary bone joins the upper middle jaw-bone (*Oberkiefer der Mütze*); and the palate bones are separated anteriorly to the extent of one half or even altogether.

The velum is here sometimes perfect, and sometimes more or less divided, until we again arrive at the highest degree in that direction.

A third form of separation is where it begins both in front and behind; behind with a division of the uvula, and in front with either single or double hare-lip. In the higher degree the slit penetrates backwards into the palate, and in front into the upper jaw and palate bones; and lastly, the slit is still greater, and there remains in the middle of the palate only a small bridge of bone. Sometimes the posterior slit is disproportionately long, or the slit in the palate particularly large, and then that of the lip is small; or the reverse takes place.

All clefts in the lips or palate that have come under my observation belong to one or other of these forms. I have only observed a single case of congenital oval opening in the soft palate, without division of the uvular or palate bones, which occurred in a young medical student.

The breadth of the slit in the palate varies as much as the length; as a general rule, the small slit is narrow, the large wide, and the larger proportionally wider. This depends upon the greater or less contraction of the muscles, which are in some instances

\* Die Operative Chirurgie. Von Johann Friedrich Dieffenbach. Erster Band. Leipzig. Brockhaus, 1845, p. 856.

weak and thin; in the case of long slit the edges are not widely separated. The cleft in the palate has mostly an elliptic form, widest in the middle, and posteriorly, where the parts of the uvula approach each other; it has seldom the triangular shape: and still more seldom are the sides in straight and parallel lines with a top round. If the cleft extends through the entire bony palate, and through the alveolar apophysis, then there is, as we have already observed, on each side only a narrow rudimentary soft palate which ends in two thin points. The divided palate is sometimes thick and sometimes thin, but the edges especially are often very thin.

If the soft palate only is divided the edges are thick, and the slit not very wide, and here a favorable result may, in general, be expected from an operation; but when the cleft is very wide, the edges are thin, and particularly when the bony palate is divided, and there is only a rudiment of the soft palate on the sides, success is doubtful. A large congenital cleft gives more hope of cure than a small one caused by abscess. The palate closure is less successful in cases of slits and holes caused by syphilitic, scrofulous, and mercurial sores, than by congenital defects; in the first because the palate is made hard and unpliant by previous inflammation: but in the last it is both pliant and extensible. Wounds in the palate which are caused by accidental injuries, or other accidental causes, are the easiest cured by sutures.

The operation on the cleft palate, and that for vesical fistula, are the two most difficult operations in surgery. The situation being unfavorable, the stiffness and sensibility of the parts, and the difficulty of respiration, make this task (in the former) more difficult. The thinness of the edges, the slight breadth of the surface of the wound, the covering of the mucous membrane, so unfavorable to any plastic process, the continued moisture caused by the increased secretion of saliva, the great tension, the want of support of the partition, and the continual motion caused by breathing and swallowing, are altogether such difficulties to the healing, that a successful operation is really wonderful.

Preparatory to the operation, Ebel has already recommended to deaden the sensibility of the parts, either with the finger or a lint pencil, and that the patient should be directed to observe his defects with his mouth open before a looking-glass. This is very useful advice, for men who suffer from chronic ulcers in the throat, by frequent gargling and pencilling, lose altogether the sensibility of these parts. Nevertheless, I never could succeed in these preparations; the patients did indeed, in my presence, put their fingers deep into their mouths, until they retched, but told me, with wry faces, that if they could not dispense with this preparation, they would rather forego the operation altogether. I have, therefore, latterly, dispensed with these preparations.

The following, are the instruments used in stitching the palate: 1. A small fine hook, such as is used in the operation for squint. 2. A small, narrow-pointed knife, with an octagonal handle. 3. A long, narrow forceps, with toothed extremities. 4. Straight, feather-spring palate pliers, provided at their distant extremity with a thick, furrowed, button end. 5. Palate needles and lead wire; the first are half an inch long, flattened, and three-cornered at one end; and at the other round, hollow, and internally provided with a screw, into which the wire can be fixed: the wire must be of pure lead, and new drawn, for old wire is very brittle. 6. A corn forceps (*Kornzange*). 7. A pair of plain curved scissors; and 8. For the closing of small holes in the palate, a small eared hook and thread-like lead wire.

**I. OPERATION FOR CLEFT OF THE SOFT PALATE.** At this operation the patient sits opposite the window, the head being supported by an assistant: he then opens his mouth, draws in his breath, and puts down his tongue.

1. *Incision of the edges.* The edge of the cleft palate is seized in the middle by putting the hook through it from within outwards; the knife is then pushed through near the hook, and drawing it with a sawing motion upwards and forwards, a strip about the breadth of a straw is removed; the knife is then turned downwards, and the lower part cut off; pulling it away with the hook. The same is done at the other side. The patient is then allowed a little rest, and to wash his mouth with cold water; but he must not gargle, as the palate is too much irritated by it.

2. *The insertion and closure of fastenings.* If the cleft extends over the whole palate, four or five fastenings are required. The needle is first put in the holder, so that the rounded end fits closely in the furrow, while the point projects in a proper manner. The instrument (needle), thus armed, is passed through the cleft, first in the upper part, and the palate pierced through about three lines from its edge, from within

outwards, on one side. When the needle appears sufficiently advanced through the palate it is laid hold of by the *Kornzange* in the left hand, and loosened by pressing the spring of the needle-holder; the needle and the wire are then drawn out at the mouth with the forceps; the second needle is then put in the needle-holder, and, drawing the wire further out, it is also pushed through the cleft and the palate pierced through on the opposite side, as in the former case, and the needle and wire drawn forward till the centre of the latter comes into the cleft. The ends of the wire, with the needles attached, are then cut off, and the wires twisted together until the edges approach each other a little. This (the twisted ligature) is then turned aside into the corner of the mouth, or the assistant can hold it on the upper part of the cheek. The other three or four sutures are then put in at measured distances, and moderately twisted, by which means the edges are made to approach but not touch each other. The wires are then by degrees twisted more and more, and the coagulated blood of the wound is removed with a small sponge, applied on a forceps; at the tighter twisting together, one side of the wire is supported close to the palate by the forceps, that the soft part be not torn. If the cleft is near closing, the upper ligature is then cut off with a flat bent scissors, about four lines from its insertion, and the double end is twisted closer together with a pliers. The same manœuvre is then performed with the other sutures. Before the wires are finally twisted together, a small piece of sponge is pressed into the space between the sutures, in order to clear off the blood. The wires are then twisted more closely together, till the mucous membrane covers the rings, so that they are scarcely seen; the ends of the wire are then again shortened with the scissors, blunted with pliers, and turned away from the tongue, and the mouth is washed with cold water. This is my mode of treatment of clefts that are not very wide, and whose edges can be joined without much straining; but if the cleft is wide, so that the palate would be overstrained in twisting the wires, the union does not succeed; the stitches would either tear through at once, or ulcerate out in a few days, therefore:—

3. *Side incisions are necessary.* One side of the palate is pierced through with a scalpel, half an inch from the edge, and half an inch from the end of the wound; the velum is then cut through upwards, in a sawing manner, to the bony palate; another incision is made on the opposite side; the blood generally flows copiously, and the mouth must be washed frequently with cold water. The beneficial effect of these incisions shows itself immediately; the still strained palate hangs down lax, like a damp curtain, and the wounds on the sides appear like two oval clefts, which would admit two fingers. The painful and straining sensation which penetrates into the ears also ceases immediately, and the air passes freely in and out through them.

Side incisions are necessary before the entire closing of the cleft, in the higher and extreme degrees of this defect; and they especially give a possibility of closing after all the wires are put in, a little twisted together, and the original cleft lessened; but if on a second twisting of the wires there still remains a cleft of a finger's breadth, one side is to be pierced, and the palate cut through as near the cheek as possible. A similar incision is made on the other side, the twisting of wires is then to be continued until the cleft is closed, and the ends of the wires are then to be cut off.

The patient must remain in bed, more in a sitting than a recumbent posture, and the watching of a careful assistant is very necessary; and the mouth must be rinsed from time to time to clear away the mucus, which collects in large quantities, and adheres to the ligatures, to assist which a piece of sponge fixed on a small stick is of use. Only water and mucilaginous drinks should be given to the patient, but not lemonade, because it induces coughing and oxidises the wire. On the third day the mouth may be washed with lukewarm water, or elder tea, and on the fourth, being assured of its complete adhesion, by probing it with a camel's hair pencil, one suture may be removed. The end of the wire is first turned to one side with a forceps, and a piece of the ring which now appears cut out; it is then turned to the other side, and the double twisted end cut off; the remaining portion of the ring may be then removed. On the fifth and sixth days the other sutures may be taken out. Frequently the operation succeeds in uniting the entire cleft.

In smaller fissures of the soft palate, which only extend over half or a third of the lower part, two or three stitches are usually sufficient: the shorter the cleft the narrower it is also, and the more probable the success, than in large clefts. If the sutures cut through the edges, and the cleft opens, the wires must be removed, and no attempt made to unite them for some time. Sometimes the stitches separate, so that

only one remains. Here they must be speedily removed, except that one, for the support of a bridge; the breadth of a straw affords a greater probability of success at a subsequent operation, because this bridge gains four-fold in breadth, through the complete healing of the remaining edges of the cleft; the preservation of union in the lower half is always fortunate, because there then remains only a short cleft with the borders approximated, which can afterwards be completely joined. If all the sutures have cut through, the operation is then indeed frustrated, but it does not lessen the probability of success at a subsequent period; still it is advisable to defer any other operation for at least a year, because, till then, the scars have not become soft, nor the palate resumed its extensibility. I have often succeeded in an operation, which I had before tried unsuccessfully. In one instance (a young lady), on whom three operations had been performed by an experienced hand, I succeeded completely in closing the cleft, with a leaden ligature, after other methods had failed.

As regards the artificial side incisions, they usually close without any assistance from art. There generally arises, in a few days, a granular condition of the edges, that fills them up; and if this protrudes too much, it can be reduced by touching it with argenti nitras.

**II. OPERATION FOR PARTIAL OR TOTAL DIVISION OF THE HARD PALATE, WITH EVEN EDGES.** The cleft in the palate is in these cases usually large, and a side incision after the insertion and partial twisting of the sutures is always necessary. The intention of this operation is to unite the palate, to lessen the cleft in the palate bone by degrees, and at last to close it, and, in the meantime, to put on an obturator, or plate with which the opening is covered.

In cases of very wide cleft in the hard palate, where there is only a rudiment of the soft palate, the closing can only be effected by previously lessening the cleft of the palate bone. The edge of each palate bone is pierced through with a strong, straight, three-cornered punch (*Pfriemen*), and a thick soft silver wire put through the opening, the ends of which are twisted together. The mucous membrane is divided near the place where the palate bones join the alveolar processes; a thin, smooth, concave chisel is then put to the bone, and it is cut through on both sides. The wires are then twisted again, till the edges of the bony cleft approach each other a little, or altogether; the first alone can be generally done. The ends of the wire are then cut off. The effect of the closer approximation of the edges of the cleft in the bone is immediately perceptible in the soft palate. The side slits in the bone, which are at first filled up with lint, close themselves by means of copious granulations, according to the usual process. The edges can sometimes be brought still closer by twisting the wire; by the application of the hot iron, or tincture of cantharides, which renders them purulent, and the bony spaces are lessened. When the space in the bone is either closed or diminished so much, that the cleft in the soft palate is considerably lessened, the sewing of the palate may then be undertaken, according to the directions already given, and side incisions made in the soft palate before the sutures are put in.

The rest of the operation, besides the exciting of the granulations on the borders of the bony cleft, consists in the removal of the mucous membrane, and pressing it into the slit; the loosened edge is then pierced with fine leaden sutures, and the place where the skin has been removed is filled up with dry lint.

The sutures, after a few days, generally break through, and the granulations that arise in the place where the skin has been taken off, prevent it from retracting altogether, and a part always remains in the cleft. This operation is to be continued from time to time until the cleft is removed.

**III. THE DIVISION AND REUNITING OF THE SOFT PALATE.** The incision of the soft palate is a necessary commencement to any operation for the extirpation of the steatomatous swelling which adheres on each side of the palate. The palate is cleft exactly in the middle upwards from the uvula: the sides of the palate immediately retract, and the rest of the operation is performed according to the rules already given. If the patient is not exhausted, and everything is in readiness, the opening in the palate may be immediately reclosed, and the operation on it be continued in the manner already described. But if the passage is not free, on account of the thickness and swelling, as one of the chief objects of the operation must be to afford a free respiration, the opening in the palate must not be closed, because the extirpating and astringent means can be introduced through it, and the result watched; and the aperture is not to be closed till it has succeeded in relieving the patient from his sufferings.

When only a partial opening is necessary, about a finger's breadth is left undivided in the palate. I was successful in many operations of this sort.

Accidental wounds in the soft palate I have only met with in boys, and always from falling on a stick or a tin trumpet, which gets between their teeth, and in one case from falling on a drum-stick. These wounds are always ragged, the rag hanging downwards, and they are always in the soft palate, because it (the instrument) is stopped by the edge of the bone. In closing these I have mostly used a strong crooked needle, applied by means of a needle-holder, and it generally requires two or three thread sutures. Ferrier tells us of an instance where a man pierced through his palate with a stick, which he held between his teeth, having fallen in jumping over a ditch. He brought a thread through by means of a metal tube which was held by the teeth, and another through the nose. Not to be imitated.

IV. TREATMENT OF THE OVER-LARGE OPENINGS OF THE SOFT PALATE. Very small openings in the soft palate, that either remain after a partially successful stitching, or are caused by penetrating sores, may be closed by exciting inflammation in the borders. For this purpose concentrated tinct. of cantharides is the most effectual; lapis infernalis causes the loss of a layer of the organized mass, and the process of inflammation that follows produces an insufficient granulation, so that the hole generally increases in size. The concentrated acids recommended by many surgeons for exciting inflammations, only produce a superficial corrosion of the borders; nor does such a quick granulation follow their use as that of the cantharides.

If the opening is large and oval, and the palate soft, the edges are cut evenly to fit to each other, leaden sutures are then put through the edges with a small eared hook, and twisted as already mentioned. If the cleft remain, after the palate stitching, the approach of the edges is easier, and the closing more probable than where the edges have become callous through ulceration. If the oval opening extends over more than half the palate, and remains after the operation for cleft palate, the cure is performed with the same instruments, and in the same manner as at first, there being plenty of room. But where only a bridge-like union has taken place, the narrow slips are best left alone at the incision of the edges (a second time), because if the union does not succeed they will readily suppurate, and a point remaining open at this place can afterwards be easily closed by constant touching of the edges with the tincture of cantharides.

In cases of round holes in the soft palate, caused by abscesses, we should not attempt to cut them into an oval form, the more easily to unite their edges, because if that operation does not succeed, the hole remains a great deal larger. The skin round the edges only is to be removed, and one or two leaden wires passed through with the small hook; a crescentic incision is then made in the palate round one half of the hole, and the wires are twisted together. This side opening is next filled with charpie. This secondary incision closes itself by granulations; and the original, either through the first intention, or by means of the granulating process. Sometimes it is advisable, especially if the opening is large and oval, to make elliptical incisions on both sides, at short distances from the edges, and then close the sutures. I have often-times succeeded in this manner in closing holes in the palate. But none of these operations are so sure of succeeding the first time as in the case of an operation on hare-lip; only an improvement can be expected, and that often after great trouble and perseverance.

V. MANAGEMENT OF OPENINGS IN THE HARD PALATE. Small holes in the hard palate are healed by granulation, which is produced by concentrated tincture of cantharides; a bundle of light charpie, tied together with a thick, strong thread, and moistened with the tincture, is inserted with a forceps into the opening which it is made to fill; and that the patient may not swallow the charpie, it is fastened outside the mouth to the cheek, by the long thread and adhesive plaster. The lint is to be removed after it has remained in an hour.

If the opening is larger, and the edges covered with a thin skin, the borders are cut round within about a quarter, or half an inch of the edge; the skin is pushed away from the bone with a scraper, and the opening fastened by a suture. The side wounds are filled up with charpie, and treated according to the directions given in cases of cleft of the hard palate.

In cases of large round holes, immediate success need not be expected; here the patient ought to have made, by a clever dentist, a palate plate (*Gaumenplatte*) to cover

the opening, but it should not project into it; it should be covered on the outside with a thin layer of gum elastic, and fastened by means of flat wire beams to the cheek teeth. The speech is by these means completely restored, but the closing of the opening need not be given up; the plate may be taken out every day, and the borders moistened with tincture of cantharides, and the plate replaced. In this manner I have frequently seen holes in the palate that a finger could be put through, closed up.

VI. COMPARISON OF THE DIFFERENT METHODS FOR STITCHING SOFT PALATES. The decided advantage of the method for stitching the palate, given in the foregoing, as well as the great number of successful cures produced by it, have procured it great extension; the incision of the border of the opening is best performed by fixing it with a small hook, and cutting it off from near the hook with a knife, in a sawing manner upwards. To believe that it can be better fixed by a hooked forceps, is as great a mistake as to think that in an operation for strabismus, the globe can be easier fixed with a forceps than a hook.

The palate can bear squeezing together less with pincer-like instruments, which irritate, than with a small hook, which is scarcely felt, in bringing the mucous membrane together. This part in particular shows its insensibility on the removal of the edge with a knife. This latter instrument is not only preferable to the scissors, but it alone can be used, because the edges of the cleft cannot be reached with the scissors, on account of the soft palate descending obliquely downwards behind the root of the tongue. If the soft palate had an opposite direction, scissors would be the most appropriate instrument, because, after fixing the point of the uvula, the edge of the cleft could be easily cut off with them, particularly as a moist glutinous border can be better cut off with a scissors than with a knife, but the uniting of the borders with leaden wire is of more importance than the mode of removing them. That a metal wire is not so suitable for the soft palate as a thread would appear evident, but the disadvantage is nothing in comparison with the advantage to be derived from it. If the insertion of the ligature through the border of the palate cleft succeeds, the closing of the fissure by twisting the wire together is perfectly easy, because it can be done by degrees, without the least inconvenience to the patient, or irritating the palate or tongue. The most difficult part of the operation in using the silk ligature is thereby avoided or converted into a very easy one, for if waxed threads are used, it is very difficult to tie the sutures equally tight; if you succeed in inserting one well, one of the others may be too tight, or too slack, one may cut through, and the others may not keep well together; and this cannot be remedied, but leaden wire can by degrees be twisted together, so that all the sutures are equally tight.

The side incisions are furthermore of particular importance. Only when the sides of the soft palate are pierced through is the operation worth anything, or any way secure, and while without them we can only hope to close small openings in the palate, with them we are able to cure the largest; because, by means of the wide openings of the side incisions, nature is forced to a regeneration by filling them up with granulations, so that the palate gains what it was deficient in breadth. Roux had an early idea, in case of clefts that extend also through the hard palate, and are, therefore, very wide, to loosen the soft palate from the bone by transverse cuts, in order to bring the edges closer to each other. The palate does, by these means, indeed, yield a little; but if one operation does not succeed the whole of the soft palate is disqualified for another, because the patches draw back and become shrivelled up. But if the operation, notwithstanding the side incisions, does not succeed, the cleft, by means of the filling up of the openings, becomes less, and gives greater probability of success afterwards. The first sets everything on one cast; the second is, at the least, half successful. Nor is the operation, as Roux recommended, made easier by the sutures being put in before the side incisions are made; the incision is, through them, made very difficult. Roux thought thereby to avoid the profuse hemorrhage, and the motion of the anterior and posterior parts of the palate, but I have never observed either. What other surgeons did to attain that object varies greatly, and there is much that is ingenious, both as regards the *manuelle* and the instruments. Inflammatory means were also recommended for reviving the edges, instead of cutting instruments; Von Gräfe recommended *kali causticum*; concentrated acid of brimstone, and spirits of salts (*concentrirte Schwefel-und Salzsaure*). Abel advises tincture of cantharides; Doniges, a hot iron (*Glühisen*). The best known cutting instruments are Gräfe's first chisel-like instrument for paring the edges; afterwards he used the knife. Roux advises taking



hold of the edge with a forceps or *Kornzange*, and cutting it off with a scissors; but I have always seen him do it with a straight button-pointed fistula knife. Hruby uses the *Bakenzange*\* and a knife, and operates with them in the same manner as with the bone lip-holder in the operation for hare-lip. The palate needles are of different shapes; Gräfe first used those strongly bent, and three-cornered, afterwards the lancet-pointed. Roux employed them larger, and more bent; Alcock half oval, with the point bent inwards; Abel, short, straight and flat; Warnecke, flat, with an ear below the point, and a whalebone handle; Doniges used a hook-needle, with the handle bent backwards; Krimer's needle, with a handle, has a useless joint near the point; Leesenberg's pincer-shaped needle opens in the length, and closes by means of a sliding ring; Schwerelt's needle, in imitation of the former, closes by means of a spring between the branches; the ear is not oval, but three-cornered, and its neck thinner than at the point. The needles without handles are used by means of a holder. The most useless of all methods and instruments is the insertion of sutures through tubes which protrude from the mouth, as in the case of under-bound polypus in the throat. That it may not be imitated I here notice Villemur's method. He used a metal cylinder, and a wooden handle; an elastic needle is put into the channel, pushed through the cylinder with the handle, and bent into a half-circle, when the edge of the palate is pierced through from within outwards; it is taken hold of with a forceps, and is then drawn forward with a thread. I think Philips and Le Roi's ingenious apparatus too complicated; the newest instrument is the one invented by the dentist Hertig, which has a clincher provided on the top.

ART. 75.—*Ligature of the External Iliac Artery.* By DR. DUNCAN.

(*Medical Times*, August 9, 1845.)

A case in which this operation was successfully performed is recorded by Dr. Duncan in the *Northern Journal of Medicine*, March, 1845. The patient was a man, thirty years of age, an American sailor, of a stout, robust frame, and full habit of body. The disease commenced in consequence of making a violent effort while reefing a sail, and was of some months' duration when he was admitted into the Royal Infirmary in Edinburgh, at which time the tumor was rapidly increasing in size. It measured six inches in length, and extended from about an inch above Poupart's ligament downwards. It was somewhat irregular in its surface, in consequence of some enlarged glands lying over it.

It felt pretty resisting at all points except over its upper and anterior parts, where it was more compressible and most prominent. It pulsated, when grasped, in all directions; but the pulsations were felt most distinctly over its upper and anterior part. Over the same part an indistinct bellows-murmur was heard, more particularly when the thigh was flexed on the abdomen. When the limb was extended so as to make the fascia tense, the tumor diminished somewhat in size; and a certain diminution could likewise be effected by pressure, and likewise by compressing the abdominal aorta so as to suspend the pulsation in the swelling. The integuments over the tumor were free from discoloration, were perfectly lax, and could be moved freely over it. There was no oedema of the limbs, and no congestion of the superficial veins. After the requisite preliminary-antiphlogistic treatment had been practised, the vessel was tied. The patient was laid resting rather on his left side, with the shoulders slightly elevated and the limb somewhat bent. An incision dividing the skin and superficial fascia was made, commencing about an inch above the middle of Poupart's ligament, and carried upwards for about three and a half inches, in such a direction as to be, when it passed the anterior superior spinous process, about an inch or more internal to it. It was slightly curved, the concavity being towards the mesial line. The aponeurotic expansions of the external oblique, the internal oblique, and transversalis were divided to the same extent. The fascia transversalis was next divided to the requisite extent, the peritoneum carried inwards, and the vessel exposed.

The thin fascia covering the artery was divided to a very slight extent, and the needle carried around the artery, with its convexity towards the peritoneum, counter-

\* A form of forceps, with one side flat, and placed at right angles with the other, already known in this country.

pressure being made with the forefinger of the left hand. As a small filament of a nerve lay over the needle along with the artery, another needle was passed from within outwards, the first being retained to serve as a guide. The vessel was then compressed over the needle, and immediately the pulsation in the tumor ceased. The ligature was secured, one end being cut close to the knot. The securing the ligature was followed by immediate cessation of the pulsations, and collapse, to a certain extent, of the tumor. The wound was brought together by several points of suture, and lint, wetted with cold water, applied. The patient was laid in bed, with the limb slightly bent, and supported by pillows at the knee. The patient scarcely had a bad symptom afterwards, except that some excitement was caused by a crowd of students around his bed at the visit the day after the operation, which was removed by an opiate antimonial draught. He was also bled from the arm the same evening. The ligature came away on the twenty-second day.

ART. 76.—*Process for the radical Cure of Hernia by Injection.*

By Dr. PANCOAST, of Philadelphia.

(*British and Foreign Medical Review*, July, 1845.)

This process, as employed by the author, is as follows : The contents of the hernia must be completely returned into the cavity of the abdomen, for the process is only appropriate to cases of reducible hernia, and those which are not of large size. The apparatus required is a minute trocar and canula, a small graduated syringe, capable of containing a drachm of fluid, well fitted to the end of the canula, and a good fitting truss for the purpose of making compression. The patient is to be placed on his back ; the viscera are then to be reduced, and the truss applied over the external ring for the purpose of keeping them up, as well as to prevent the possibility of the small quantity of fluid thrown in from getting into the cavity of the abdomen. The surgeon then presses with the finger at the external ring, so as to displace the cord inwards, and bring the pulpy end of the finger on the spine of the pubis. At the outer side of the finger he now enters, with a drilling motion, the trocar and canula, till he feels the point strike the horizontal portion of the pubis just to the inner side of the spine of that bone. The point is then to be slightly retracted, and turned upwards or downwards ; the instrument is then to be further introduced till the point moves freely in all directions, showing it to be fairly lodged in the cavity of the sac. The point of the instrument should now be turned into the inguinal canal, for the purpose of scarifying freely the inner surface of the upper part of the sac, as well as that just below the internal ring. The trocar is to be withdrawn, and the surgeon, again ascertaining that the canula has not been displaced from the cavity of the sac, throws in slowly and cautiously with the syringe, which should be held nearly vertical, half a drachm of Lugol's solution of iodine, or half a drachm of the tincture of cantharides, which should be lodged as nearly as may be at the orifice of the external ring. The canula is now to be removed, and the operation is completed. A compress should be laid above the upper margin of the external ring, pressed down firmly with the finger, and the truss slid down upon it. The patient is to be kept from changing his position during the application of the truss, and should be confined for a week or ten days to his bed, with his thighs and thorax flexed, keeping up steadily as much pressure with the truss as can be borne without increasing the pain, in order to prevent the viscera from descending and breaking up the new adhesions while they are yet in the forming state, or avoiding the risk of their becoming strangulated or being rendered irreducible by the lymph effused into the cavity of the sac.

The author has practised this operation in thirteen different cases, in but one of which was there any peritoneal soreness developed that excited the slightest apprehension, and in this case it subsided under the application of leeches and fomentations. In several of these cases a single operation appeared to be perfectly successful. In others, where the sac was larger, or the patient was less careful in keeping the truss steadily applied during the first week, or from a cautiousness in introducing in the first cases a more limited amount of fluid—the effect was merely to narrow the sac, rendering a repetition of the process necessary for the cure. Of the permanency of the cure, during several years after the operation, the author is unable to speak, most

of the patients operated on being temporary residents of the Philadelphia Hospital, and passing, after a few months, beyond the reach of inquiry. While under the cognizance of the author, they were employed, without a truss, as laborers on the farm attached to the institution, and in no one of the cases, during this period, had the hernial tumor recurred. It would, however, be but a proper measure of precaution, to direct the truss to be worn subsequently for several months, in order to confirm the cure.

The greater number of these operations were performed by the author eight years ago, before classes of students at the Philadelphia Hospital, but as he was able to trace the future history of the cases but for a few months only, they were not deemed of sufficient importance for publication. Very recently, M. Velpeau has published a process almost precisely the same as that just described.

ART. 77.—*Fungus of the Inferior Maxilla successfully treated.*

By D. HARRINGTON, Esq., Philadelphia.

(Condensed from the *Dublin Medical Press*, Oct. 15, 1845.)

A young lady, in the enjoyment of excellent health, with no hereditary morbid tendency, was troubled in April, 1842, with severe pain in the back teeth and lower maxillary bone on the left side. After a few days two teeth were extracted. A small spongy tumor of a livid hue soon appeared upon the surface of the lacerated gum, which was lanced, but afterwards increased in size, although no pain attended it. Its growth was extremely rapid, and it was cut down every two days for two weeks. After this, powerful caustic was applied for two or three weeks, without any beneficial effect. The fungus now nearly filled the mouth, and almost precluded the possibility of swallowing. On the 25th of June, the fungus and a large portion of the *upper part* of the maxilla as far back as practicable, was removed by the knife. When the mouth was examined two weeks afterwards, the fungus had sprung up again nearly to its original size. After six or seven weeks the patient was on the eve of suffocation from the size and extension of the disease into the roof of the mouth, and down the throat.

Near the end of 1842, the young lady came under Mr. Harrington's care. The tumor presented the usual appearance of fungus hæmatodes in many places, and of ordinary cancer in others. Her general system sympathized, her face had the unhealthy hue of pale mahogany, the buccinator and temporal muscles, and the parotid gland were enormously enlarged, and the former so extremely rigid that the jaws could not be extended more than one-third the usual distance. The remaining part of the diseased jaw on the left side had become distended on its upper surface, apparently to nearly three times its usual width, from near the symphysis back to its angle, and sent up the morbid and fetid growth, this being also attached to the lining membrane of the mouth, and to the constrictor muscles and sides of the tongue, and extending far into the pharynx. The posterior portions of the fungus were now removed by drawing it upwards by the aid of a wire loop, and cutting it away in pieces. The excision was performed by little and little day after day, for several weeks in succession, for the purpose of avoiding troublesome and dangerous hemorrhage, as from the situation it would have been impossible to use an actual or potential cautery with success if called for. During this treatment, Mr. Harrington also employed galvanic electricity, by placing the positive pole within the mouth upon the fungus, and making the negative pole move constantly upon the exterior surface of the left side of the cheek, during ten to fifteen minutes each hour throughout the day, for two or three weeks, with such intensity as the patient could conveniently sustain. Sarsaparilla was given in large quantities, and the left side of the face continually poulticed with wormwood softened by simmering it in vinegar, and powerful astringents were kept constantly in the mouth.

In about a month there was an apparent improvement both locally and generally, although, notwithstanding the incisions, from its rapid growth, the fungus was nearly of its original size, and its radicles had extended, and attached themselves to new parts of the membrane of the mouth and tongue, and posteriorly near to the œsophagus. All the ordinary astringents had failed to be of much service, and several new ones had been tried, when at length *ashes* made from cast-off stems of tobacco, put into

thin linen sacks, so formed as to cover, as far as possible, the upper surface of the fungus, and be held in place from hour to hour by the pressure of the upper teeth, were found to operate like a charm, exerting a powerful caustic action, which would continue for hours notwithstanding the flow of saliva. Two of these sacks were prepared for each night.

With the exception of the galvanising, these means were systematically attended to for three or four months, during which the fungus contracted its circumference by almost imperceptible degrees, when an opening was discovered quite through the remaining portion of the maxillary bone, near the angle; and a sinus extending from this opening, anteriorly under the fungus, nearly to the symphysis. This opening was treated with astringent, and occasionally with acid injections, and sometimes filled with tobacco ashes.

At the end of twelve months the appearance of the patient offered the most conclusive evidence of a return to perfect health. But for a remaining enlargement of the left side of the lower maxilla, it could not be discovered that she had ever been afflicted.

The author, who has been in the habit of seeing numerous cases of fungus affecting the mouth, never met with one that appeared to be so little under control as this; he states it as probable, that the too confident reliance on the knife and powerful caustics, to the neglect of constitutional means, with the fatal hope of accomplishing much in a very short time, has been a common cause of failure in the treatment of such affections; and he thinks the tobacco ashes a valuable addition to our caustic remedies, especially in the management of excrescent affections of the mouth, vagina, rectum, &c., as it can be placed in a cavity, and made to operate for hours in succession upon a morbid surface, without at the same time injuring healthy parts. The sack for containing the ashes should be made of an impervious material in all its parts, except where intended to cover and act upon the diseased surface.

ART. 78.—*On the position to be maintained in the Treatment of Disease of the Hip-joint in the young.* By ASTON KEY, Esq.

(*Medical Gazette*, Oct. 24, 1845.)

[The following is an abstract of a paper laid before the Physical Society of Guy's Hospital.]

The insidious progress of strumous disease of the hip-joint, the division of the disease into its several stages, and its usual termination in a greater or less degree of ankylosis of the joint, are, I presume, so well known that I shall forbear to enter minutely into the pathology of the disease; my object in these remarks is to point out the inconvenience of the deformity that is almost always found to attend convalescence, the causes which give rise to it, and the best mode of preventing it.

The first change usually observed in the relative length of the two limbs, is the temporary elongation or shortening of the one affected, according to the position which the patient maintains in the act of progression in the early stage of the disease, when it is characterized rather by a sense of weakness than actual pain. In the commencement of the affection, the patient throws the weight of the body instinctively upon the sound limb, and merely steadies or balances himself upon the unsound one. If the foot be carried forward and placed flat on the ground, the same side of the pelvis is carried forward and drops, giving a lengthened appearance to the limb. If, on the other hand, the unsound limb is not advanced much in progression, and the patient rests on his toes, the pelvis is carried upward on that side, and the limb appears to be shortened. Both these states are usually only temporary, and disappear if the patient is prevented from walking, and is made to lie down.

To those who have had much experience of this affection it is almost needless to remark, how rarely it is seen in the early stage, at a period when properly applied remedies can restore the joint to its previously healthy state. The insidious nature of the attack disposes both medical men and parents, alike unsuspecting of its real nature, to regard the affection as one merely of weakness, until unequivocal symptoms evince the commencing disorganization of the articular cavity.

The second stage of this disease is no longer, as the first has been, one of erythema of the synovial lining of the joint, but assumes a more active form of inflammation, extending to the more dense parts of the capsule and cartilage, and is attended with

severe pain in rotation and abduction of the limb. Often, in the earliest part of the second stage, the limb will not admit of perfect extension, and by careful examination of the joint it may be discovered that the thigh is permanently flexed upon the pelvis. It is this state of the limb to which I wish to direct your attention, as fraught with the worst consequences to the patient.

This state of flexion of the femur on the pelvis usually takes place slowly and imperceptibly, but sometimes it is rapidly induced by a sudden attack of inflammation in a joint which has previously exhibited signs of disease in its mildest form. This is the worst form of the disease, so far as deformity of the joint is concerned, for the intense pain which the patient experiences on the slightest movement of the limb, induces him to seek for ease in positions that add greatly to the distortion of the limb, by the obliquity given to the pelvis. The patient is seen lying usually on the sound side, with the affected limb drawn up to nearly a right angle with the pelvis; as the patient lies on his side, the affected limb appears to be three or four inches shorter than the other. When he is placed on the back, a position assumed with difficulty, and the bearings of the two patellæ and the spinous processes of the ilia are noticed, the former are seen to differ as much as from two to three inches, while only a difference of an inch is perceptible in the level of the latter. This would seem to show that the limb is actually shortened; such, however, is not the case, but by examination of the pelvis, it will be seen that the twist of the pelvis on the lumbar vertebræ, by carrying the affected joint backwards, is the cause of the great shortening of the limb.

During the stage of inflammation it is impossible to use any means for counteracting this distorted condition of the pelvis; and by the time that the patient is able to bear extension, so as to restore the pelvis to its natural bearing, and to diminish the angle which the femur makes with it, the parts have become so fixed in their new position, as to render it difficult of alteration, and impossible in the majority of cases to restore them to their natural bearings. The consequence is, that when the patient is convalescent with a somewhat stiffened joint, the foot cannot be brought down to the ground, and a shoe with a sole of two inches is required to enable him to walk with the foot flat on the ground.

How is this state of things to be prevented? The only remedy for the evil is, in every case of hip-joint disease, to maintain the straight position as soon as the nature of the affection is ascertained, which is a position applicable in all stages of the disease.

In the early stage characterized by only a slight limping in the gait, or by an occasional slight pain in the knee or thigh, it possesses the advantage of maintaining the joint in a state of complete repose. The articulation being at rest, the muscles do not act, but remain in a passive state. On the contrary, when the limb is kept bent, with a pillow placed under the knee, a position usually resorted to in the early stage of the disease, the pelvis and thigh of a child are continually in motion; little or no pain is felt by the patient, and injunctions to preserve rest are made in vain. In the bent position, therefore, rest, one of the most important elements in treating a diseased joint, is not maintained, and the disease therefore fails often to be arrested. By a long splint applied along the outer side of the limb and made to extend from the toe to the axilla, entire rest is given to the joint, and absolute inaction of the muscles preserved. I believe, from what I have seen of this stage of the affection, that the arrest of the disease is greatly expedited, by the entire tranquillity which is obtained by the straight position in conjunction with the mercurial treatment.

The principal advantage of preserving the limb in a straight position is seen in the second stage of the disease, when under the united effects of inflammation and ulceration of the cartilage of the joint, the tendency of the flexor muscles to contract induces such a degree of deformity in the lumbar vertebræ, pelvis, and hip-joint, as when once allowed to take place can never afterwards be wholly remedied. The position on the back is not irksome to the patient, nor painful, but is borne with cheerfulness and without complaint, because in the movements which the body undergoes, the diseased joint is kept at rest.

The course which abscess follows when suppuration takes place in the joint, seems to be in some degree modified by the straight position. When the limb is allowed to bend upon the pelvis, matter is usually formed at the back part of the joint under the glutææ muscles, or at the side of the joint on the anterior margin of the glutæus medius. But when the straight position is observed, the suppurative action is inclined to the

forepart of the joint, and the collection of fluid is formed on the outer edge of the iliacus muscle, on the side of the tensor vaginæ femoris. This course of the matter may be accidental; but in two cases, now in Guy's Hospital, suppuration has taken this course, one having burst and so discharged itself; and in the other case, the abscess is making its way towards the surface in the same direction. I know of no inconvenience attending this course of the abscess; it is easily managed, or perhaps more so, than when it occurs on the posterior aspect of the joint. But there is an advantage gained in the advanced stage of the disease, too important to be passed over; viz., the prevention of dislocation of the head of the bone on to the dorsum ili; an occurrence, though by no means frequent, yet found sometimes to take place, and greatly adding to the deformity and shortening of the limb. It can occur only in the flexed position of the limb, which thrusts the head of the bone backward against the capsular ligament and posterior part of the acetabulum; and these structures, together with the head of the bone, being partly destroyed by the ulcerative process, the head gradually escapes from the cotyloid cavity, and becomes looped upon the dorsum of the ilium.

The state of ankylosis in which this disease usually leaves the joint, requires a concluding observation. In reply to any objection which might be raised to the utility of a limb ankylosed in a straight line with the body, the only inconvenience arising from it occurs in the sitting position, in which the patient, being unable to flex the limb sufficiently to sit on a chair in the usual manner, is compelled to drop the affected limb in a nearly perpendicular posture, and to sit with the pelvis resting on the side of the chair. This is the only evil attending the straight position, and is more than counterbalanced by the uniform length of the two limbs, and the absence of almost all lameness in the act of progression.

Care, however, should be taken to prevent the patient bearing too early upon the unsound limb during convalescence, when the straight position has been observed in the treatment of the case; for a sense of weakness, as in the first stage of the disease, induces him to raise the pelvis on that side, in order to prevent much weight being thrown upon the weak limb. The effect of this elevation of the ilium is to curve the lumbar vertebræ in a lateral direction, and this distortion becomes permanent.

#### SECT. IV. RARE SURGICAL CASES.

##### ART. 79.—*A Foreign Substance in the Ear for more than twenty years.*

By J. MAVION SIMS, M.D.

(*From the American Journal of the Medical Sciences*, April, 1845.)

A negro man of the name of Lewis, applied to Dr. Sims on the 20th of August, 1843. On picking the ear the day previously, the pleasant titillation it produced, caused him to run the instrument deeper than he had ever done before, and he was astonished to find it strike against something hard. He said that he had always been a little deaf in that ear, so much so that if the opposite one was closed, he could hardly hear at all. Whenever he caught cold, it seemed to settle there, producing an "itching in the bur of the ear," pain, swelling, and tenderness, which would last for a few days, and then subside, without any treatment. Now and then, however, he would be confined to his bed with fever, and very violent inflammation of the organ, to which he was in the habit of applying onion poultices for two or three days, or longer, before he could get relief, and then it was generally accompanied by the discharge of matter.

The last bad attack that he had was in 1834. The first was as far back as he could remember, when he was a very small boy. In his youth, the attacks were more violent, lasted longer, and visited him more frequently, than at a later period. On examination Dr. Sims could easily discover something of a very black color, filling up completely the bottom of the meatus. Exploring it with a probe caused no pain, unless it was pushed forcibly against it. It appeared to be round, and on trying to rotate it, by pushing against it laterally, it was perfectly impacted and quite immovable. He attempted to pass a delicate pair of forceps, but it was so tight, that the effort of forcing the blades between the foreign body and the parietes of the meatus

caused so much pain that he had to desist. Moreover, the slipping of the forceps (which happened twice) might, he feared, have a tendency to drive it farther into the tympanum. Dr. Sims succeeded by syringing with warm water in ejecting it so far as to occupy that portion of the canal between the concha and the curvature, from which it was easily lifted out with the forceps. It was the stone of a cherry, which from the history of the case, must have been in this secure retreat for more than twenty years.

It was very smoothly polished, and as black as charcoal, which color it lost in a few days by exposure to the action of the atmosphere. After its removal, he complained of a feeling of coldness in the ear, and his hearing was painfully acute. On the 15th of Nov., 1844, Dr. Sims examined Lewis's ear, and discovered a large piece of indurated wax in it, which he loosened with a probe, and removed with the forceps. In its outward extremity was a beautiful cup or concavity, fitting most accurately the cherry-stone, which had been removed fifteen months before. A few days after this, the ear was found perfectly healthy in appearance, but there was evidently a difference between the dimensions of this and the opposite meatus.

The meatus from which the stone was extracted, appeared to swell out in its posterior wall into a pouch or sinus, a short distance from the tympanum.

This was the spot occupied so long by the cherry-stone, more recently by the inspissated cerumen, and, Dr. Sims remarks, "doubtless owed its peculiarity to the fact that the stone was introduced when he was a very young child, and the meatus thus accommodated itself to the size and shape of the intruder."

ART. 80.—*Case of Gun-shot Wound of the Chest; the thick linen patch, with which the Ball was enveloped, remaining in the left lung twenty-five years.* By M. H. HOUSTON, M.D., Wheeling, Virginia.

(*The American Journal of the Medical Sciences*, April, 1845.)

John M'Mullen slipped his gun through a crack in the fence preparatory to crossing it himself, and lodged its contents, consisting of a large ball, a thick linen patch, and some tow wadding, in his left side. They entered beneath the axilla, between the fifth and sixth ribs. The ball passed obliquely upwards and backwards, in the direction of the ribs, and was lodged at the side of the spinal column, immediately beneath the skin. An incision was made through the skin, and the ball with a piece of bone, supposed at the time to be a portion of one of the vertebræ, extracted, and as much of the wadding as possible was taken out through the opening made by the entrance of the ball. There was considerable hemorrhage at the time from the wound, and also some expectoration of blood.

He recovered from the effects of the accident so far as to be able to attend to the ordinary duties of life, but was left with a cough of a peculiar character, and from time to time abscesses formed in the situation of the wound beneath the axilla, which were opened or burst of themselves, and continued discharging pus of a very fetid character for an indefinite time. Whilst the discharge continued, his cough was very much relieved, though, from its extreme offensiveness, he always desired the external opening to be closed as soon as possible. His general health suffered from the continued irritation in the lungs. He was dyspeptic and subject to bowel complaints, as flatulent colic, cholera, &c., which became more and more frequent. Under these attacks, when attended by Dr. Houston, he had violent paroxysms of cough, somewhat similar to whooping-cough, attended with considerable expectoration. The paroxysms continued without intermission until complete exhaustion took place, and when this happened, he expectorated the usual quantity of pus, with scarcely an effort, and the whole was over for a time. There was no regularity in the recurrence of the paroxysms, though they usually took place when he was in a recumbent position, or when he suddenly changed from one position to another. He ultimately sank under an attack of cholera morbus at the age of 45 years, being twenty-five years from the period when he received the gun-shot wound.

The body was examined ten hours after death. The emaciation was extreme; the forms of the vertebræ being distinctly visible through the abdominal parietes. This, in fact, had been the case for several days before death. The sternum being removed, the ribs on the left side were cut away as low down as the adhesions of the soft parts would permit. The upper portion of the lower lobe of the left lung was in a state of complete hepatization, and was attached to the ribs by very strong firm adhesions, to

the distance of about two inches, surrounding the opening through which the ball had passed. These adhesions being divided as close as possible to the surface of the ribs, disclosed an opening in the lung, communicating externally with the one between the fifth and sixth ribs, and extending upwards and backwards through the substance of the lung in the direction of the spinal column. The fifth and sixth ribs were contracted together by firm bony union. The ball, in passing between them, had taken away about one half of the breadth of each rib, leaving a circular hole, after nature had performed her work, through which the end of the little finger could be passed without difficulty. Pursuing the dissection, the lung was found strongly adherent to the fifth and sixth ribs, at their junction with the spinal column, the place at which the ball had passed out. A portion of the sixth rib at this point had been carried away by the ball, and was mistaken at the time of the accident, for a portion of one of the vertebrae. The openings in this vicinity were all closed by a firm cicatrix. It will thus be seen that there existed a cavity in the substance of the lung, extending in the direction of the fifth and sixth ribs, closed posteriorly and superiorly, and communicating anteriorly and inferiorly, with the circular opening in the ribs. Upon introducing the finger into this cavity, a foreign body of some kind was discovered. The lung being removed, and the cavity laid open, it was ascertained to be a smooth firm substance, somewhat in the shape of a silk-worm, though of what it consisted none of those present were able at first to determine. Being soaked in water, it was gradually spread out, and proved to be a piece of coarse home-made linen cloth, evidently the patch of the bullet, about two inches and a half in length by two inches in width, which had been rolled into the shape in which it was found by the action of the lung. The linen retained the marks of burnt powder on its edges, and was in a state of the most perfect preservation. The cavity, which contained this roll of cloth, was lined with a smooth but firm membrane, and had opening into it two or three small bronchial tubes, one of which was dilated at its mouth very much into the shape of a funnel. This dilation was no doubt caused by the end of the roll of linen becoming engaged in it, and its presence there producing and keeping up irritation of the bronchus, will satisfactorily account for the violent and long-continued paroxysms of cough. The natural effect of the action of the lung would be to keep it in its situation until relaxation from exhaustion took place, when it would be disengaged by the mere force of gravity. This will also account for the absence of expectoration during the continuance of the paroxysms, and the facility with which it was effected as soon as the paroxysm was over. As long as the linen was driven by the action of the lung into the funnel-shaped opening, it acted as a stopper, and prevented the entrance of the pus; as soon, however, as it was removed, the pus flowed of its own accord into the bronchial tube, and was expectorated with the slightest exertion.

It would be idle to speculate on the facility with which this piece of linen might have been removed from its situation in the lung. To have done this, it was necessary in the first place to ascertain its presence, and, although the case was examined by some of the most eminent men of the profession, in different parts of the country, I have yet to learn that the presence of a foreign body in the lung was suspected by any one of them. The stethoscope disclosed nothing that might not have been reasonably anticipated from the general history of the case. The interesting fact is established by this case, that a foreign body may occupy a situation in the substance of the lung during a period of twenty-five years, without causing death. The right lung and the remaining portions of the left were in a healthy state. The stomach was enormously distended, and its mucous coat very much thickened and corrugated. Its general appearance was very similar to that of the skin of the face. With the exception of a small patch of inflammation near the pylorus, it presented no indications of recent disease. The small intestines were healthy throughout their whole extent. The mucous membrane of the colon was thickened and corrugated in a manner similar to that of the stomach; and exhibited along its entire track, innumerable small ulcers, surrounded by blue elevated edges. No indications of recent inflammation. The other organs presented nothing abnormal.

ART. 81.—*Entero-vesical Fistula.* By MR. MACLURE, Surgeon.

(*Collectanea Medico-Chirurgica*, 1845.)

Mr. Maclure describes the following interesting case. A female, aged 73, the mother of a large family, who had always enjoyed excellent health, had a non-malignant tumor



formed in the parietes of the abdomen, about midway between the anterior superior spinous process of the left ileum and the pubis. It was removed by Mr. Keate; did well at first; but shortly after the operation erysipelas came on, more in the centre of the abdomen and to the right side. This was attended with considerable constitutional disturbance, and ended in sloughing of the integuments to a large extent, but the sloughing did not encroach upon the wound, which cicatrized perfectly. An extensive sore remained after the sloughing process, but no fears were entertained of a fatal issue.

Mr. Maclure was called in and found that the following symptoms had supervened. Great pain in the region of the bladder and rectum, attended with a constant and invincible desire to make water; painful tenesmus with procidentia ani; great debility; and an evacuation of what appeared to consist of feces, with a small admixture of urine, which were supposed to be discharged at the same time from their respective outlets.

Sedative remedies were administered with very indifferent success. The irrepresible desire to make water was but in the slightest degree abated, and this only through the anodyne effects of large doses of acetate of morphia. Three days afterwards, the catheter being introduced, it was discovered that the mixture of feces and urine came from the bladder, and "such a blast of *status* accompanied it as almost extinguished the candle which a servant was holding at some distance." The same tranquillizing treatment was pursued, with nourishment to support the patient's strength. The catheter was used daily, and the removal of the contents of the bladder gave great temporary relief; the bladder was also washed out on these occasions with warm water. Half a pint of decoction of *pariera brava*, combined with tincture of hyoscyamus, was administered daily. The rectum was washed out by means of enema. Poppy-head fomentations, suppositories of soap and opium, muriate of morphia, to the extent of four grains a day, were found very partially and inadequately to alleviate the dreadful sufferings which the patient endured. After seventeen days, much less feculent matter than previously, found its way into the bladder, without any diminution of suffering; it also became more of a brownish and glairy nature, streaked white with what was believed to be phosphate of lime. Coma occurred, and about twenty-four hours afterwards, and twenty-seven days from the commencement of the fatal symptoms, the patient sank. No post-mortem inspection could be obtained. It was conjectured that the ulcerated communication existed somewhere about the sigmoid flexure of the colon, and a corresponding part of the bladder.

ART. 82.—*Utero-vesical Fistula*. By ISAAC HARRISON, Esq., Reading.

(Condensed from the *Provincial Med. and Sur. Journal*, June 11.)

Mrs. H., aged 41, after a protracted labor and delivery of her seventh child, had retention of urine for which the catheter was employed. On the thirteenth day she felt something "give," and the urine flowed away. During five years she led a most miserable existence from the continual dribbling of the urine; her medical attendants could discover no fistulous passage, and treated the case as debility of the bladder.

In this state she accidentally came under Mr. Harrison's observation. By the aid of the speculum he ascertained that the urine issued from the os uteri. On exploring the bladder with a small catheter, the concavity downwards, and a finger in the os uteri, the catheter and the finger came in contact. There was an opening sufficiently large to admit a small catheter between the fundus of the bladder and the uterus about three quarters of an inch within the cervix.

The author resolved to attempt to close the fistula by exciting irritation. For this purpose, on the 14th of July, 1841, a Brodie's catheter, covered with a long piece of twine, was introduced into the bladder, concavity downwards; and being guided by a finger within the os uteri, the fistula was easily found, the instrument was passed through into the vagina, the thread seized, and the catheter withdrawn. Thus, one end of the twine hung from the urethra, the other from the vagina. To the urethral extremity was tied a skein of six threads of glover's silk, oiled, and then by drawing at the vaginal extremity it was brought through the fistula, and the urethral and vaginal ends tied together.

From the time of the introduction of the silk no dribbling took place, except when using some extraordinary bodily exertion. On the fourth day, irritation beginning, the

first thread was withdrawn; on the fifth, the second; on the sixth, the third; on the tenth, the fourth; and on the seventeenth, the fifth; leaving only one remaining. During this time considerable irritability of the bladder existed, so that its contents were obliged to be evacuated every hour. During the three subsequent months the size of the silk was changed three times, so that at last it was reduced to the smallest size compatible with sufficient strength and durability. On the 22d of October the last thread was withdrawn, at a favorable opportunity, just after the catamenia, when it might be imagined that, if ever, the edges of the orifice would be in a condition to close. In twenty-five days the dribbling was as bad as ever.

Four large threads were again introduced, and in twenty-eight days they were reduced to one, the relief being as complete as on the former occasion. The patient has been in the same comfortable state for four years; she changes the thread herself once in three or four weeks; not a drop of urine has escaped the last three years, and she is capable of performing the usual domestic duties. The thread requires to be drawn down once a day to cleanse it from sabulous matter.

One circumstance not easily explained is, that at each menstrual period the urine is voided highly charged with the catamenial fluid. Mr. Harrison remarks that this cannot depend upon the situation of the opening, for the patient is able to retain the contents of the bladder for eight or ten hours, and that it must depend therefore either on the form of the opening, or on some evolution of the lining membrane of the uterus, from which it is secreted into the bladder.

ART. 83.—*Fungoid Growths in the Cavity of the Mouth.* By DR. BLOCH, of Warde.

A girl had not less than 140 excrescences in the cavity of the mouth. They were mostly of the size of a flattened pea, some round, many grown together, the majority, especially the smaller, pedunculated; others with a broad basis; all firm and hard, and in color the same as the mucous membrane of the mouth. They were mostly situated on the upper surface of the tongue, and seemed to be enlarged *papilla fungiformes*. Many of these were larger and of lighter color than the others, and all were isolated and pedunculated. Several were situated on the edge of the tongue, on the tonsils and uvula, and others on the inner surface of the cheeks, from the coronoid process of the under jaw to the angle of the mouth, on both sides. The largest and most developed were found in the left corner of the mouth. No wounds could be found on the gums or palate. As the patient experienced no inconvenience, they had only been noticed within a short time; no cause for their presence could be discovered. Bloch cut away most of the excrescences with a curved scissors, and applied nitrate of silver to the cut surfaces, as well as to the small tumors; the section was unaccompanied by bleeding, and gave little pain. On examination, the morbid growths appeared to consist of thickened cellular tissue, and the peduncles were furnished with a few small vessels.

*Oppen. Zeits. für die Ges. Médecine, and Lancet, Aug. 16, 1845.*

ART. 84.—*Compound Fracture of the Os Frontis in a Child 18 months old, three pieces of bone remaining in the Cerebrum during four months.—Recovery.*

By THOMAS INMAN, M.D.

(*Report of the Liverpool Pathological Society. Edinburgh Medical and Surgical Journal, October, 1845.*)

Isabella Oliver, aged eighteen months, was brought to the infirmary in her mother's arms, having just received a kick from a horse. An extensive fracture of the right frontal bone was discovered, with great loss of substance. The little finger was passed through the opening into the brain, which was extensively lacerated, but no fragment could be detected. The child did not appear to suffer from the injury. A little lint, dipped in cold water, was laid over the wound, with directions to the mother to keep it constantly wet, &c.

In a few days the brain was seen to be superficially in a sloughing condition; but no bad symptoms appeared. Six weeks afterwards the slough separated, excepting at one spot, where it adhered pertinaciously, evidently having very deep connections. The rest of the exposed surface was covered by healthy, florid granulations. Four months after the injury four pieces of bone were found in the wound, and readily ex-

tracted; they were all rough and dry, as if they had been dead a long time; of different sizes, but in all sufficient to cover a half-crown piece.

In six days from this time the wound had cicatrized completely. The union, however, was membranous only, and the brain could be distinctly seen to pulsate through it. Considerable pressure could be borne at this part without producing any particular effect.

No untoward symptoms occurred at any time after the injury, if we except a slight debility while the slough was separating, indicated by the weakness of the cry. No other treatment was adopted than an occasional powder, and the continuance of water dressing.

ART. 85.—*Ligature of the External Iliac Artery for a circumscribed false Aneurism from the division of a superficial branch of the femoral artery by a pistol shot; a suspicion being entertained that the femoral trunk was wounded.* By MR. LISTON.

(Condensed from the Reports and Commentaries in the *Lancet*, *Medical Times*, &c. By Dr. Potter and others.

On the evening of the 20th of May, Mr. Seton received a wound from a pistol ball, which, entering the upper part of the right thigh a little above and in front of the great trochanter, and crossing the abdomen, passed out about the middle of the fold of the left groin.

No surgeon was present, but the non-medical witnesses of the event describe the hemorrhage which occurred as rapid, the blood being florid, in large quantity, and issuing *per saltum* from both wounds; and as rising when uncontrolled in a jet to the height of two or three feet from the wound in the right hip. Attempts were made to arrest the hemorrhage by pressure over the wounds, but the patient fainted, and the hemorrhage ceased.

When first seen by a surgeon, the patient appeared almost lifeless, but was restored by proper measures. The following day the temperature of the surface became more natural, the pulse increasing in rapidity and somewhat in strength. The track of the ball was marked by an elevated ridge, from one opening to the other, and some ecchymosis of the skin extended from this line over the lower part of the abdomen and scrotum. The patient suffered great pain in the groin and right lower limb generally, with a sensation of numbness of the front of the thigh, and partial loss of power over the muscles of that part of the limb. Subsequently, the application of iced water and bladders of ice to the right groin gave some relief.

In the course of the next few days little change occurred, but on the seventh day after the receipt of the injury (May 27th), the swelling over the track of the ball appeared more evident in the right groin, and was here observed for the first time to pulsate with each stroke of the heart. During the next two days, the swelling increased, although not very rapidly, and the pulsation became stronger.

On the evening of the tenth day (May 30th), Mr. Liston first saw the case. The patient's skin was blanched and waxy, and his pulse rather quick and feeble. He suffered at times severe pain in the limb, but there was no marked expression of anxiety in his countenance or manner; he felt his strength improving, and was hopeful as to the final result. The wound on the right hip was circular, filled with a dry depressed slough, with a narrow faint blush of redness round its margin; that in the left groin was a jagged line already partly closed by a thin cicatrix. There was extensive ecchymosis of the skin in both groins, and over the pubes, scrotum, and upper part of the right thigh.

In the right groin there was a large, oval, visibly pulsating tumor, extending transversely from about an inch and a half on the inner side of the anterior superior spinous process, to about opposite the linea alba; its lower margin projecting slightly over Poupart's ligament into the upper and inner part of the thigh. On handling, it appeared elastic but firm, very slightly tender, and not capable of any perceptible diminution in bulk by pressure. The pulsation was distinct in every part, and equally evident whether the fingers were pressed directly backwards, or whether they were placed at its upper and lower margins, and pressed towards the base of the tumor in a direction transversely to its long axis, the parts being for the time relaxed. The femoral artery was slightly covered by the swelling, and its pulsations were obscure in the

upper third of the thigh. No pressure on this artery or on the abdominal aorta arrested the pulsation in the tumor, and pressure in the former situation was attended with severe pain. It was inferred that the tumor was a circumscribed false aneurism.

The question would now arise : Has the *femoral* artery been wounded ?

If the wound from the pistol-ball had injured the femoral artery, so as to give rise to an instantaneous, rapid, and severe hemorrhage, there is the highest probability that Mr. Seton would have died on the field :—

A pulsation being felt on the distal side of the tumor was against there being a wound of any consequence in the femoral artery :—

For several days there had been no return of hemorrhage, and no tumor was visible, which could scarcely have been the case if the femoral or any important artery was wounded. If the wound throughout its whole length were subcutaneous, the femoral artery would in all probability be uninjured. The reports do not state that this circumstance was made out during life, although it turned out to be the case, on post-mortem examination.

The presumption was accordingly very strong, if indeed the certainty was not established, that the injured artery could not be the femoral.

But the following circumstances presented themselves to form a *prognosis*, from which it was inferred that the patient was in great if not imminent peril : The blood in the tumor appeared fluid, the tumor pulsed very forcibly, the circulation was gradually being restored, and the effusion if left to itself would probably increase, as it had since its first appearance, although there was some doubt about this during the latter period ;—"some thought it had been enlarged during the preceding night." An additional quantity of blood might be poured out at any moment. When the sloughs separated, renewed hemorrhage might occur, and the further loss of blood would in all probability prove fatal ; or, the patient, weakened by its loss, would have to bear up against profuse suppuration after the closure of the injured vessel by ligature or otherwise.

On the question of *treatment*, pressure either with or without the application of cold, was looked upon as quite insufficient to arrest even the further increase of the effusion, inasmuch as the bleeding vessel could not be more directly pressed upon than any other part, and as from the very form of the swelling, the compressing force would tend to drive the blood already extravasated further under the fascia of the abdomen.

The first indication, therefore, which presented itself was,—to lay open the tumor, search for the wounded vessel, and tie it above, and below the wounded point, but it was thought practically to be unwarrantable ; because

1. Supposing the operator able to command the circulation on the proximal side, it must still be attended with a dangerous loss of blood.

2. As the supply of blood to the tumor could not, in this instance, be effectually interrupted by pressure on any large arterial trunk, the hemorrhage, in searching for the wounded vessel, would probably be unusually great.

3. Supposing that the common femoral artery should be found wounded, or one of its branches divided close to the main trunk, so as to render it necessary to apply two ligatures to the common femoral itself, the chances of the recurrence of secondary hemorrhage on the separation of the ligatures would be very great ; considering the frequency with which this occurs in cases where the common femoral is secured by a single ligature, and in the most favorable position that the operator can select.

It was now, therefore, a question whether the external iliac artery should be tied. Against the performance of so formidable an operation the following reasons existed :

1. The patient's constitution : he was very fat, particularly considering his age ; had lived very freely, taken little exercise for years, was delicate and impressible, and when indisposed was always observed to be easily lowered by treatment.
2. The recent shock which the constitution had received ; two such shocks within nine days must almost inevitably prove fatal.
3. The character of the operation ; the extent of the wound would be a source of immense constitutional irritation in such a subject ; the peritonitis which would supervene must be almost inevitably fatal,—the danger of mortification of the limb,—the unsuccessful result of large operations generally.

On the other hand, it was supposed that mortification of the limb was less likely to occur from there being little pressure on the femoral vein, and that the chances of peritonitis and mortification taken together were less unfavorable than the chances of

immediate and secondary hemorrhage attaching to the other operation. It was accordingly determined to tie the external iliac.

As to the time of performing the operation, the following circumstances existed in favor of delay. The further effusion of blood might never take place; if it did take place, it would not necessarily destroy life. No circumstance existed at the moment urgently demanding an operation. The delay would introduce no new element of danger, nature would either show a tendency to close the wound, or new symptoms would exhibit themselves; the patient might live a very considerable time without any interference, and an aneurism of this size and superficial situation might vanish without causing death.

The surgeons in attendance agreed, on the other hand, that any increase in the quantity or superficial extent of the extravasation must add materially to the difficulties of operating. They had previously agreed that an operation was necessary, and as the patient had rallied tolerably well, they considered that the sooner the supply of blood to the tumor was cut off by ligature the better chance the patient would have of life.

*Operation by Mr. Liston the eleventh day after the injury. (May 31, nine, A.M.)* The patient having been placed on a table in a good light, an incision was made through the skin, commencing just above Poupart's ligament, rather nearer its outer than its inner termination, and continued upwards and a little outwards. A layer of from one and a half to two inches of subcutaneous fat, and the external oblique muscle, having been cut through by successive strokes of the scalpel, another thick layer of yellow lobular fat projected into the incision, hiding completely the internal oblique muscle, and looking at first somewhat like the omentum. This layer of fat, the internal oblique and the transversalis muscles, were then cut through cautiously, and to a limited extent, until the thin transversalis fascia just appeared. This was readily torn through, and the finger being introduced beneath, it was lastly divided to the full extent of the external incision by means of a curved probe-ended bistoury carried along the finger as on a director. The sub-peritoneal cellular membrane thus exposed, proved to be so loaded with adipose tissue, and consequently so firm and solid, that it was easily separated from the face of the fascia iliaca; and for the same reason, the peritoneum and intestines were more readily and completely held aside than is usual in this operation. At the bottom of the deep wound thus formed was seen, first the iliacus muscle under the fascia, and then the psoas and the genito-crural nerve; but at first nothing was visible of the external iliac artery, nor could it be felt in its usual situation, close against the margin of the psoas. The fact was, that the vessel, adhering more closely to the sub-peritoneal cellular tissue than to the other parts, was drawn with it slightly out of its course; and turning the ball of the finger inwards towards the cavity instead of towards the brim of the pelvis, its pulsations were felt distinctly. The external iliac was now a little more exposed, a common aneurism needle passed under it, and a strong twisted silk ligature carried round; but before this was tied, it was ascertained that when the vessel was pressed against the curve of the needle, the pulsation in the tumor was completely arrested. No return of pulsation took place in the tumor, but symptoms of peritonitis rapidly set in, and the patient died about thirty-five hours after the operation.

On post-mortem examination, it was found that the ball had passed altogether in the subcutaneous fat; that it did not pierce the fascia lata; and that the only vessel wounded, and forming the false aneurism, was a superficial branch of the femoral artery, which was divided close under Poupart's ligament, and nearly an inch from the main trunk, its divided extremity being perfectly open. The blood effused and forming the main tumor was coagulated (forty-three hours after death). There were several pints of sero-purulent fluid in the cavity of the peritoneum, and several "patches of inflammation" on parts of that membrane covering the large and small intestines, and the parietes of the abdomen near the wound made for the application of the ligature. This wound had a sloughy appearance, and was filled with a thin purulent discharge. The artery had been tied about the middle of its course, and was but little separated from surrounding parts. There was no coagulum in it, either above or below the ligature. The vein was sound and healthy. There was a small abscess in the left groin, and a collection of blood in the cavity of the tunica vaginalis. The cord was not divided, but blood was extravasated in patches along its course.

## PART III.

### MIDWIFERY, AND DISEASES OF WOMEN AND CHILDREN.

#### SECT. I. MIDWIFERY AND DISEASES OF WOMEN.

ART. 86.—*On Rupture of the Ovarian Cysts.* By M. CAMUS.

(*Gazette Médicale*, March 1, 1845.)

[THE rupture of an ovarian cyst into the abdomen without death supervening, is a fact, which though not new in the annals of science, is still one sufficiently interesting. The following are the principal circumstances of the case, related by M. Camus to the Medical Society of Paris.]

A woman, aged 85, had labored under an ovarian cyst for the last two years and a half,—purgatives, diuretics, ieduret of potassium, and compression, had alike failed in procuring any benefit. The patient was on the whole, however, in a tolerably comfortable state, till the 17th January, 1844, when the tumor became the seat of severe pain, accompanied with extreme lassitude, shivering, and slight fever. [A bleeding prescribed.]

On the 18th, the patient was suddenly seized with severe pain in the abdomen, prolonged shivering, nausea, vomiting, and great restlessness; pulse 126, small and hard, colic, face anxious as in peritonitis.

On examining the abdomen, M. Camus discovered, to his surprise, that *its shape was completely altered*; instead of projecting, it was flattened at the centre, but the abdomen had gained in size what it had lost in prominence. Percussion yielded a clear sound in the median line in the neighborhood of the umbilicus, where formerly a dull sound had been heard. At the sides, on the other hand, the clear sound was replaced by a dull one. The undulation of fluid from one side to the other had never been before so perceptible. These remarkable changes were evidently due to rupture of the cyst, and the consequent effusion of the fluid it contains, into the peritoneal cavity. The encysted dropsy had become converted into a true ascites. Notwithstanding the fears to which this accident gave rise, the peritonitis terminated happily in the course of two or three days.

On the 22d and 23d, the urine, hitherto scanty, became clear and limpid, and in such quantity as to fill the vessel five times in the twenty-four hours. During this time, the abdomen also lost from two to three inches daily in circumference, and became more and more pliant.

On the 1st February, twelve days after the rupture, the urine still continuing to be passed in abundance, the existence of fluid in the peritoneal cavity could no longer be discovered. The abdomen was reduced to a size to which the patient had long been a stranger, and all symptoms of inflammation had long disappeared.

Notwithstanding the employment of regular pressure and diuretics, the fluid soon again accumulated, and the abdomen acquired a size even greater than formerly. On the 17th July, the patient was seized with sudden pain, and an extraordinary movement in the abdomen, which phenomena being almost immediately followed by sinking of the median line and enlargement of the sides, indicated that effusion of fluid had a second time taken place into the peritoneum. The same series of phenomena recurred as formerly, but they were of less severity. The quantity of urine was also less. The fluid was again, however, entirely absorbed, although somewhat more slowly.

At the end of four months and a half the cyst had again filled; a third rupture took

place; there were the same symptoms, but with diminished severity. The urinary crisis was also less abundant, although the absorption was accomplished in ten days.

[M. Camus was naturally led by the preceding case, to seek for analogous ones among authors, and from a comparison of these, he has deduced some highly interesting conclusions. As regards the termination,—the patients in whom rupture of an ovarian cyst took place into the peritoneum, may be classed under four categories:—]

1. Into those in whom death occurred immediately, or within a few days of the first rupture. These cases are rather numerous,—but in most, dissection disclosed that the cyst, previous to the rupture, had contained a purulent fluid more or less altered, and not the serum usually met with. This circumstance is sufficient to account for the fatal termination of the disease.

2. Into others, who, after one or more ruptures, remain affected with ascites. Morgagni relates several cases of this kind, some observed by himself, others by Basius, Guterman, and Schecher. It is not, however, demonstrated that in these cases the ascites did not originate at the same time with the ovarian cyst, and previous to the eruption of the latter.

3. It is to be observed, that most patients who have survived one or two ruptures, were cured only temporarily, and at last sank under the progressive effects of the encysted dropsy. Mauriceau (*Obs.* 49), Morgagni, Boyer (*Maladies Chirur.*), and Btuff (*Thesis* by Cazeau, 1844), quote examples terminating in this way, which are interesting, as they exhibit a large number of ruptures and peritoneal effusions, followed by absorption of the liquid, without any serious alteration of the general health.

4. There was one patient who, after several ruptures, was definitely cured of the encysted dropsy. This *unique* case is given by M. Bonfils, and was the subject of a report to the Academy of Medicine, by M. A. Bérard.

M. Camus then puts the following question: Can art do anything towards rendering the rupture innocuous, and thereby produce a cure of these ovarian cysts? As there is no hope of obtaining a cure, and consequently no end to be served by inducing rupture, provided the cyst contains pus instead of serum, this point ought first to be ascertained by a previous puncture. With this important exception, M. Camus repeats the advice given by M. Bonfils, who recommends, after puncture of the cyst, and previous to withdrawing the canula, to move the instrument somewhat briskly in different directions, so as to contuse and even tear the wound made in the walls of the cyst, and thereby prevent the adhesion of its edges, and so to allow a continual escape of fluid from the interior of the cyst into the peritoneal cavity, where it will be absorbed. But can the successful results said to be obtained by M. Bonfils' method be thus explained? Ought we not rather to attribute them, with Bérard, to the effects of adhesive inflammation—induced by the movements of the instrument—producing obliteration of the cavity. M. Camus admits that the explanation of M. Bérard is the more logical. But he, at the same time, remarks that in the case of rupture, the fluid is not evacuated as after puncture, but remains in the abdomen, in contact with the opening into the cyst, and that thus its pressure must be greatly adverse to the work of adhesion, on which the radical cure depends.

In any case, however, the innocuousness of these ruptures, and the reabsorption of the effused fluid, are two facts worthy of the fullest consideration. They ought henceforth to be taken into account in the history of these affections, and would authorize us more than ever to have recourse to a mode of cure more certain and less dangerous than any we yet possess for this formidable species of dropsy, we mean subcutaneous incision of ovarian cysts; or, according to circumstances, the simple puncture, operations already several times proposed by the author of this method.

ART. 87.—*On the comparative Merits of Incision and the Ligature in Uterine Polypus.*

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By SAMUEL ASHWELL, M.D. &c.\*

The author observes, that “in England the ligature has always had a decided preference, and no better proof of its safety and utility can be adduced than the general success attending its application. If a polypus can be noosed beyond its most bulbous part, in nineteen out of twenty cases the hemorrhage will be restrained; and more

conclusive testimony can scarcely be adduced, than that which supports this statement. From the imminent danger of the disease, its bleedings, the patient is almost invariably and at once secured, by the successful application of the ligature. There may be difficulties in fixing it, and no doubt death has occasionally followed its use. But excision cannot always be practised, and the cases where it is difficult to apply the noose, are the very examples in which we should be afraid or unable to excise. When excessive pain, inflammation, gangrene, and death have occurred, the ligature must have been incautiously used or too long continued; although even in these instances, the evils might have been averted by timely removal. Not so, however, with excision. How much blood may be lost in the division of the pedicle, or how great the difficulty of stopping the hemorrhage may be, can only be conjectured prior to the severing of the growth. The hazard must at all events be encountered.

"Though preferring the ligature as the easiest and most universally applicable in practice, I fully admit the value of excision, and especially of excision below the ligature. Many of the disadvantages attendant on the use of the ligature are avoided, when a polypus is excised. It is quickly done, and without pain or injury to the neighboring structures. But is it quite certain that we can always guard against the risk of excessive hemorrhage? That there are many polypi which may be so removed, does not admit of doubt. Dupeyren is said to have cut away 200 polypi by the knife, and hemorrhage only occurred twice. Velpeau's experience is favorable to excision, and Sir B. Brodie has been fortunate in similar operations. Many other names might be mentioned. I have also removed several polypi by excision. On one occasion the hemorrhage required the plug, and in this case little or no blood was lost. But if the polypus be large and of hard structure—if it be of the white kind, which has scarcely any blood-vessels—if there has been but slight hemorrhage during its growth—if there be no pulsation in the stalk—excision will be the preferable practice. Or if the operator incline to be cautious, he may noose it first, and either immediately, or in a few hours afterwards, excise below the ligature. If the polypus be still partly within the uterus, and the hemorrhages are endangering life, the ligature may be employed; but here it would be impossible, at least with safety and without dragging down the uterus, to use the knife. In the operation by excision the bistoury is used, and for applying the ligature the double canula of Neissen, as improved by Gooch, and which has been rendered perfect by the addition of a silver windlass.

ART. 88.—*On Rheumatism of the Uterus.* By ISAAC TAYLOR, M.D., New York.

(*American Journal of the Medical Sciences*, July, 1845.)

[Rheumatism of the internal generative organs of the female appears to have been known as long back as the year 1685, when Dr. Charlton, of London, published an essay entitled, "*Inquisitio de causis Catameniorum et Uteri Rheumatismo.*" Since which time it has been noticed by several writers both in this and foreign countries. The latest authors who make mention of it are M. Chereau (*Mémoire pour servir à l'étude des Maladies des Ovaires*), and Dr. Rigby (*Reports on the Diseases of Females*, Med. Times, 1844-5), who traces the connexion between rheumatic affection of the ovaries and dysmenorrhœa. The disease appears most commonly to attack females towards the close of gestation, but may also appear in the unimpregnated condition. In the former case the intensity of the pain commonly gives rise to the suspicion that labor is far advanced, and from its similarity to true labor-pains can only be recognized as rheumatic by examination per vaginam. The diagnosis of the affection is thus laid down by the author:]

From *neuralgia* of the uterus it is distinguished by the fact that the former is more generally periodic in its character, the remissions being longer and more decided. The pain also is lancinating, and is chiefly confined to certain points. The patient is both able and willing to move about, the abdomen is not universally tender, but only on the points alluded to, neither is the distress of countenance so great as in the rheumatic affection. *Hysteritis* is distinguished by its access not being sudden or paroxysmal; by the existence of fever; by the pain being confined to the hypogastrium.

Spurious labor-pains are of frequent occurrence, and often harass the patient for weeks antecedent to labor; these, however, are readily distinguished from rheumatic



pains. They generally come on in the night and terminate by morning; are uncertain in their appearance, the patient is able to move in any direction, and does so, being very restless. There is no tenderness, nor anxiety of countenance.

In natural labor there is not much tenderness, except during the last stage; the patient is able to move about; the pains come on regularly increasing in power till they reach their acme, and then declining.

[Having thus briefly glanced at the various species of pain for which uterine rheumatism may be mistaken, the author gives the following observations as distinctive of the latter:] Rheumatic pains come on suddenly, soon become *expulsive*, and of many minutes' duration; remissions short; pain attacks the entire uterus, which contracts firmly, inducing the patient to scream with agony; the position of the patient is upon the *back, unwilling to move*; the slightest excitement of the uterus produces pain; tenderness of the abdomen is diffuse; countenance anxious from the first. When the disease terminates, it does so either by profuse perspiration or by discharge of urine.

[The treatment consists in the exhibition of Dover's powder in ten or fifteen grain doses every two or three hours, with emollient applications or belladonna plaster to the abdomen. The extract of belladonna may likewise be rubbed upon the os uteri.

As the subject of rheumatism of the womb has not met with very general attention, we shall here bring before our readers one of the best accounts of the affection with which we are acquainted, extracted from a recent work by M. Cazeaux (*Traité Théorique et Pratique de l'Art des Accouchements*.)]

"Rheumatism of the womb," says M. Cazeaux, "after having long attracted the attention of the German practitioners, was but little known in France, when M. Dezeimeris, in his journal (*l'Expérience*), made public a series of facts already known and published by certain German authors. About the same time M. Stolz, who had become acquainted with the labors of our neighbors on this subject, studied the affection at the Clinical Hospital at Strasburg, and communicated the results of his researches to his pupils. One of these gentlemen, Dr. Salathé, has very recently defended a thesis on this topic. To his work, and to the bibliographical researches of M. Dezeimeris, I am indebted for what I am about to say upon this disorder, which is hitherto unknown to our French nosologists.

"According to Radamel, rheumatism may attack the non-gravid womb; but our business here is to study it only as occurring in pregnant women. It may attack at any stage of gestation, and we shall, therefore, after some general considerations on the subject, point out the influence it may exert in pregnancy, in labor, and in the lying-in.

"*Causes.* All such circumstances as are favorable to the development of rheumatic affections, may likewise lead to an attack of rheumatism of the womb. Thus exposure, whether momentary or prolonged, to dampness and cold, insufficient clothing, sudden transposition from an elevated to a very low temperature, and all other causes, constitutional and atmospheric, regarded by medical authors as occasional or predisposing causes of rheumatism, may also produce that of the uterus. But, besides these general causes, there is one peculiar to the malady under consideration. I allude to the facility with which this organ, under the thinned integuments of the abdomen, feels the impression of cold in the latter months of pregnancy; the abdomen being guarded, where it incloses the uterus, by extremely light garments, which are closely in contact with it, and the antero-sacral region being often badly protected by jackets of insufficient length.

"*Symptoms.* Rheumatism of the womb often attacks persons constitutionally predisposed to nephritis. It may coexist with a general affection of the same nature; but, in a majority of cases, the uterus alone, and the adjacent structures, are the seats of disorder. It has, besides, been frequently found to be a consequence of the sudden cessation of rheumatic pain originally situated in some other part, and suddenly transposed to the womb. Whatever may be the mode of its onset, the disorder is easily recognized by very decided characteristic features. Its principal symptom is pain; where not the least violence has been offered to the organ, the womb becomes the seat of a general or partial pain, the intensity of which varies from the very slightest sense of weight up to the most insupportable agony. It may affect the uterus wholly, or only attack some particular part of it, as the orifice, the fundus, or the cervix. Where the rheumatism is fixed in the fundus only, the pain is felt in the region of the umbilicus. It is increased by pressure, by the contraction of the abdominal muscles, and

sometimes by the mere weight of the clothes; the patient, often, is unable to move; if the disorder is seated lower down, there are shooting pains that run from the loins towards the pelvis, the thighs, the external genitals, and the sacral region, along the ligaments of the uterus. Lastly, when the cervix is the affected part, it may be known by the vaginal touch, which gives rise to excessive suffering. But of all the causes that serve to exasperate the pain, none is so distressing as the incessant motions of the child.

"Like other rheumatic pains, those of the womb are moveable, and are observed occasionally to pass suddenly from one portion of the organ to another. They often suddenly cease, and proceed to attack some other organ. This is most apt to happen, when the uterine rheumatism has been preceded by a fixed pain in some other part of the body, and where remedies are in use calculated to recall the pain to its original seat.

"These pains are characterized by frequent exacerbations that are variable as to their duration and intensity; according to the stage of the malady, they are succeeded by remissions, during which the patient only complains of a vague sense of weight.

"The pains of uterine rheumatism are generally attended with a degree of recto-vesical tenesmus, which is violent in proportion to the severity of the pains and the approximation of the seat of the rheumatism to the lower segment of the organ. In such cases, the patient is tormented by perpetual desire to urinate. The discharge of the urine is accompanied with smarting pain, sometimes with severe pains, and in some instances the discharge cannot be effected at all; the efforts to discharge the contents of the rectum are, in some cases, equally fruitless. Most of the German authors attribute this double recto-vaginal tenesmus to the rheumatic disease, which is not always confined strictly to the uterus alone, but may likewise invade the circum-jacent organs. M. Stoltz seems disposed to think that it arises from the close sympathetic relations of parts so nearly approximated to each other. Should these new pains be owing to a vesical or rectal rheumatism, those of the womb would disappear, or, at least, be diminished in degree, according to the views of M. Salathé in his Thesis.

"It is to be supposed that there is a degree of heat and swelling of the affected parts; but it is easy to perceive the difficulty of absolutely determining this point, one which we are compelled to admit from analogy.

"Pains of such violence, situated in an organ so important, must of necessity produce a pretty severe general reaction. The disorder, like most of the inflammatory diseases, generally commences with a slight rigor, which lasts fifteen or twenty minutes. The succeeding fever diminishes, or may even wholly cease during the interval between the attacks, yet while they last it is commonly quite severe; the pulse is hard and frequent, the face flushed and excited, the tongue red and dry, the thirst urgent; the skin is hot, and the patient is often found to be extremely agitated and restless. Towards the close of the paroxysm, there frequently supervenes a copious sweat, which seems to be the harbinger of a decided improvement. After this, these general symptoms are appeased, together with the uterine pains, only to reappear with them, after the lapse of a few hours, or even of several days.

"1st. *Influence of rheumatism on the progress of pregnancy.* Where the attacks may have persisted for a length of time, or where they have been very violent, they are followed by uterine contractions, and may, in this way, bring on premature delivery. In such a case, the patient suffers from severe tensive pain. This feeling of tension is not equable, for it rises to a great height, and then subsides—to begin again and pursue the same course at different intervals. At first the womb becomes partially, and afterwards universally hardened during the pain. The cervix becomes rigid and partially dilated, but its dilation is at first slow and difficult, and its subsequent progress does not correspond with the pace of the pains. The abortion, with which she is now menaced, is more likely to take place in the febrile than in the apyretic form of rheumatism. Indeed, abortion is not so common an occurrence in the case as might be presumed. In some instances the os uteri has been observed to dilate to the extent of two or three centimeters in diameter, the bag of waters has been formed, and afterwards withdrawn little by little, the orifice closing again, and all symptoms of labor wholly to disappear. As long as the diameter of the os uteri does not reach the extent of five centimeters, we may reasonably hope to put off the labor. These uterine

rheumatic pains may simulate labor-pains, and lead to the belief that they are really labor-pains, while in fact they are not at all so. The characteristic signs of the rheumatic pains, given in the following paragraph, should serve to prevent such a mistake. It is surely to mistakes of this kind that we ought to refer those cases of supposed protracted pregnancy, and those instances of real labor, begun, and suspended again for weeks, and even for months together."

On the 21st January, 1842, Mrs. O., aged 28, in her first pregnancy eight and a half months, was suffering with the symptoms of severe rheumatism of the womb, which had afflicted her since about the 12th of the month. On the 16th of the month, fearing that labor was begun, I examined, and found the os uteri dilated fully a quarter of an inch, and the cylindrical tubule of the cervix wholly gone: but on the 29th of the month, or fourteen days later, during all which time she suffered more or less, the os uteri was not only closed up, but the cylindrical tubule of the cervix was reproduced, and continued so until her child was born, on the 16th day of February.

About three years since, a lady, a missionary, landed here from a voyage from Madras, of one hundred and twenty days. She walked a good deal on the day of her debarkation, and was seized with the signs of labor the same evening, being not quite eight months gone with child. The pains were strong; I found the os uteri an inch and a half in diameter, with the membranes tensely drawn across the opening. The labor was suspended in the night, but returned again the next afternoon; and during twenty-four days that she continued to be annoyed, more or less, with signs of labor, the os uteri never closed, and at the end of that time she gave birth to a small, but healthy male child. I have had many occasions to see persons threatened with labor, and even precipitated into it, by rheumatism of the womb.

M. Cazeaux says nothing of the diagnosis, which I regard as one among the most difficult that can be presented to the mind of a physician. To make the diagnosis between pleurisy and pleurodyne, is often a very difficult task, and one of considerable moment, too; but to make out satisfactorily all the points of difference betwixt rheumatism of the womb and the acute inflammations of the organ, especially in the lying-in, is still more momentous. Rheumatism is, so far as my experience of it enables me to speak, most apt to attack very nervous and susceptible women, who have become weakened and reduced in strength, from whatever cause. In such subjects, it is highly desirable to get through the case without much resort to the stronger antiphlogistic measures; but if we mistake an intense metro-peritonitis for a case of rheumatism of the uterus, we shall abstain from any vigorous and eradivative employment of the lancet, under the vain hope of curing our patient by milder and less costly processes than the exhausting venesections which are so indispensable in the true inflammation.

I have had such great difficulty in settling, to the satisfaction of my own judgment, the diagnostic differences betwixt the two maladies, in several violent cases that have fallen under my notice, within a few years, that I should be thankful for the indication of a clear method of coming to the decision. In both maladies is the fever often violent; in rheumatismus uteri there is rheumatic neuralgia of other parts, and a preceding history, that may enlighten the practitioner to his decision. In the two diseases there is equal sensibility of the abdomen; meteorismus may accompany both. The heat of skin, and frequency and volume of the pulse, are alike in each, the decubitus similar; but the tongue is clean, so far as I have noticed it in the rheumatic case. Distracted with the uncertainty and doubt in which the case is involved, I have commonly been able to satisfy my mind by a direct appeal to the organ itself, in the operation of *touching*. In both maladies the *touch* is at first painful; in metritis and metro-peritonitis it is so under all circumstances, but in rheumatismus uteri, though the first touch of the womb is painful and *quick*, yet, when the organ is gently and slowly raised upwards with the index and medius, the pain either ceases wholly, or is much mitigated, by taking off in this way the tenesmus uteri; not so in the inflammation, where every touch is more painful the more it is prolonged. I may be permitted to add, that I have heard of several cases of death from puerperal fever, where, upon an autopsy, not the least vestige of inflammation was discovered, either in the peritoneum, the uterine veins, the substance of the uterus, or any of its appendages.\* Is it

\* M. Cazeaux himself, near the end of this article, says, that it is often liable to be mistaken for a pure inflammation, and then treated by remedies more likely to be injurious than beneficial. If it be true that the danger of life from rheumatismus uteri be but small, as M. C. supposes, it is at least dangerous when improperly treated under a false apprehension of its dangerously inflammatory and destructive character.

uncharitable to suppose that such patients died, not with the malady for which they were treated, but with another disorder, to wit, rheumatismus uteri, which demanded quite a different mode of cure? But I fear to extend this note too far; and therefore, M. Cazeaux proceeds as follows:

"2d. *Influence of rheumatism upon labor.* An attack of uterine rheumatism generally retards the progress of a labor, and sometimes even renders the spontaneous expulsion of the fœtus wholly impossible. In addition to the general phenomena I have described, there are here some special ones to be met with. 1st. It is well known that a normal contraction does not begin to be painful until it has accomplished the greater part of its task, and is in the act of dilating and distending the os uteri; in other words, the true pains of labor do not begin until the instant at which the energy of the corpus uteri begins to overcome the resistance of the cervix. In rheumatism of the womb, on the other hand, the uterine contraction begins to be painful from the start, and before the least power is exerted on the neck, so that the cause of the pain is not in the violent distension of the orifice, but in the contraction itself, in other morbid circumstances, and in other relations of the nerves and contractile fibres of the womb. 2d. In a natural labor the contractions commence at the fundus uteri, and are directed towards the lower segment. In rheumatism, instead of commencing at the fundus, they commence at the painful point, and run towards the neck in an irregular manner. Again, the pains exist before the contractions of the womb, and, under their influence, when they are established, acquire a high degree of intensity. Their violence sometimes arrests the contractions before they have run through their ordinary cycle. They are, in such a case, brisk, short, and grow less and less frequent. 3d. Towards the close of the labor, when the action of the womb requires to be sustained by the voluntary contraction of the abdominal muscles, the woman, for fear of increasing her sufferings, refrains from contracting her abdominal muscles, which causes the labor to be excessively slow. The patient is in a state of extreme anxiety; the frequent pulse, the hot skin, the thirst, the urinary tenesmus, are much augmented. When the sufferings are too much protracted, she at last falls into a collapse (which is often a fortunate event for her), during which the pain is suspended. Under these circumstances, a profuse sweat has been observed, which has had the happiest effect on the rest of the labor. But in other instances the womb grows more and more painful; it is rather in a state of permanent contraction or fibrillar vibration, than of real contraction; the pulse becomes accelerated, and now the woman is under the influence of a metritis, which renders the labor extremely painful.

"3d. *Influence of rheumatism of the womb on the puerperal functions.* One may conceive, *a priori*, that uterine rheumatism, by causing irregular or partial contractions of the organ, immediately subsequent to the birth of the child, might be the occasion of much difficulty in the delivery of the placenta; but this is not the place to discuss that point.

"In health, after the delivery, the womb contracts, and thus prevents hemorrhage. But in rheumatism, this return of the organ is very incomplete; it remains above the pubis, and is large. The after-pains are now very painful, and continue for a long time. The uterine vessels are less compressed, whence may arise very copious floodings. On the other hand, the state of suffering in which the organ is placed diminishes the lochial discharge and the secretion of milk. The persistence of abdominal pain, added to the symptoms of a general re-action, might lead to the diagnosis of a peritoneal inflammation, though none such should really exist.

"*Prognosis.* Rheumatism of the womb is not a disease capable of causing the loss of the mother's life, but from the pain it occasions, and the mistakes to which it leads, it nevertheless merits all the attention of the physician. In pregnancy it may cause abortion, and though it does not generally exhibit itself until the sixth month, it is always unfortunate for the child to be born before full term. We have already remarked upon the unfavorable effect produced by the disorder on the course and character of labor-pains. On many occasions it has led to the necessity of artificial delivery. It may likewise render the delivery of the after-birth difficult, and derange the course of the phenomena that ought naturally to follow after the birth of the child. At this period it is often confounded with phenomena that are purely inflammatory, and is then treated by measures that are hurtful rather than beneficial.

"The disorder is for the most part less favorable when attacking at an early than a late period of gestation, because it has a more unfavorable influence on the progress

of the gestation, as yet incompletely established and settled, and also because it has a tendency to be reproduced again and again, before the completion of the term, and on account of its disposition to return during the labor, which it is apt to render laborious.

"*Treatment.* 1st. During pregnancy, bloodletting, intestinal revulsives (ipecac., castor oil), baths, opiated lotions for the abdomen, anodyne potions, sudorific drinks. Such are the measures which have been most constantly successful. In cases where the affection of the uterus had followed the sudden disappearance of a rheumatic pain of some other part, revulsives should be applied to the part first affected. 2d. During labor the same means are applicable; should they fail, and the os uteri, as to its dilatation, admit of it, let the delivery be effected by means of turning, or the forceps. 3d. After delivery, sudorific drinks, anointing the abdomen with opiated ointments, baths, leeches to the vulva, and when the lochial discharge has failed, ipecac. and opium combined."

*Note in Colombat on Diseases of Females, translated by Dr. Meigs, p. 287.*

ART. 89.—*Treatment of Pruritus Vulvæ.* Dr. Meigs observes that having been many times consulted for the relief of pruritus vulvæ, and most frequently in pregnant women, he has rarely had occasion to order anything more than the following formula :

R. Sodæ biber. ℥ss;  
Morphiæ sulph. grs. vj;  
Aq. rosæ distil. ℥ viij. M. F. lotio.

He directs this to be applied three times a day to the affected parts, by means of a piece of sponge or a piece of linen, taking the precaution first to wash the surfaces with tepid soap and water, and to dry them before applying the lotion. He confidently recommends this prescription as suitable in most cases of this distressing malady.

*Ibid.*, p. 271.

ART. 90.—*Prevention of Abortion.* The following practical remarks are also from the pen of Dr. Meigs, the translator of Colombat :\* "I believe that the most successful mode of treating persons who are predisposed to abortion, before quickening, is one which I have long employed, and with a most satisfactory result. If the patient has had repeated miscarriages, I advise her to use an anodyne enema, consisting of a wine-glassful of boiled starch, mixed with forty drops of laudanum, to be taken at bed-time, and to be repeated every night until quickening takes place. Perhaps the influence of the laudanum may be useful in suppressing or lessening the catamenial (?) act, or the efforts of the vesicular developments in the ovaries; or at least it may deprive the uterus of an abnormal degree of sensibility, the persistence of which might lead to its early contraction, and consequent expulsion of the fœtus."

*Ibid.*, p. 593.

ART. 91.—*On Rupture of the Uterus, with a case in which Gastrotomy was resorted to as the mode of Delivery.* By WILLIAM JACKSON, Esq., Lecturer on Anatomy and Physiology at the Medical Institution, Sheffield.

(*Provincial Medical and Surgical Journal*, Sept., 1845.)

The fatality of this dreadful accident to the parturient female demands our sympathy, and calls for our utmost exertions to devise some means of relief, if any can be found, under circumstances presenting an almost hopeless condition of our patient; for an escape from this terrible disaster may be considered almost miraculous. The uniformly fatal termination in a very short space of time, of every case of rupture of the uterus that has come to my knowledge in the practice of my friends, or of my own, induced me seriously to reflect what could be done, or what might be rationally attempted, in these deplorable cases. Having many years ago been instructed in a school† whose teachers repudiated the uncharitable doctrine of non-interference, once held by Drs. W. Hunter and Denman on this subject, and although the experience I have had since may not give encouragement to act otherwise, yet the recorded cases of successful attempts to rescue the subjects of these unhappy cases from death, have influenced me to adopt prompt and energetic measures of relief in every example

\* Op. Cit.

† Dublin Lying-in Hospital

requiring my interference. I regret to learn, however, that cases in which the fœtus had escaped into the peritoneal cavity, are very generally abandoned to their fate. Under the impression which past experience had had upon my mind, and from a calculation of the relative results of different modes of practice adopted in these cases, I determined when a fair opportunity should occur, to resort to gastrotoomy, as the most rational practice, especially in those cases of escape combined with a diminished capacity of the pelvis. This practice was resorted to in the following case:

Sarah Booth, aged 26, a stout, healthy female, married seven years, and is the mother of three children. Her former labors had been severe and protracted, but she had done well under the management of the midwife, who had been in attendance in the present instance, till the supervention of the accident.

She first felt pains about five o'clock, A.M., of November 19th, 1842. The labor proceeded very slowly, arising, there was reason to apprehend, from a disproportion between the head of the fœtus and the pelvis, the latter being slightly contracted, and the former unusually large. The midwife stated, that after severe suffering through the day, the head had advanced considerably in the pelvis, when, about four, P.M., during the continuance of severe pain, there was a sense of something suddenly giving way, after which the head receded, and a considerable hemorrhage followed. The patient became faint, and sickness supervened, but no actual vomiting followed. She continued faint, pallid, and restless, with ineffectual efforts to vomit; but no further uterine action occurred, although she complained of distressing sensations in the abdomen. The parties becoming alarmed, sent for the late Mr. Clarke, surgeon, of this town, who, from a careful examination, ascertained that a rupture of the uterus had occurred, and he lost no time in obtaining a consultation, for which purpose he requested my advice. We visited the patient about five o'clock, and made an examination. No presentation could be felt; the vagina was filled with coagulated blood, and the fœtus could be felt through the abdominal parietes, having escaped into the peritoneal cavity. The poor woman's state was alarming; pulse rapid and feeble; pallor of the countenance; slight efforts to vomit; great restlessness and anxiety characterized her present condition. There could be no doubt, from our inquiries, that the whole of the fœtus, and probably the placenta, had at once escaped into the cavity of the abdomen. A question rose in what way the child was to be removed. We considered that to introduce the hand into the uterus, now considerably contracted, and drag the child again through the lacerated wound of that organ, and afterwards to have occasion to resort to great force in effecting the delivery of the fetal head through the pelvis, would be likely to inflict additional injury upon the parts, and to exhaust the feeble powers of life yet remaining. It appeared to me that gastrotoomy offered the best chance for our patient's life. In this opinion the gentlemen (Messrs. Clarke and Gillett), who assisted me in this case, concurred.

A clear and candid statement of the circumstances of the case and its prospects, every way considered, having been given to the poor sufferer and her husband, they willingly consented to the adoption of any measures which we judged advisable. As a necessary preliminary step, the urine was drawn off, and the patient was placed in a convenient position, on her back on the bed. The integuments of the abdomen being kept on the stretch by an assistant, an incision of about six or seven inches was made with a scalpel, extending from two inches above the pelvis to a short distance of the umbilicus. The peritoneum having been laid bare, an opening was made, and that membrane divided co-extensively with the external wound. The omentum now protruded, which, being carefully held on one side, a tense bag, containing a yellow fluid, presented itself, being, in fact, the ordinary membranous envelope of the fœtus in utero. The contents, consisting of the liquor amnii, together with a large quantity of coagulated blood, were evacuated by a puncture, and the head of the child presented itself. The fœtus was extracted by the feet, and it was found that the external wound was barely sufficient to allow of the passage of its head. The placenta had been expelled from the uterine cavity, and was lying amongst the intestines, together with a considerable quantity of fluid and coagulated blood, all of which was removed. The time occupied in the performance of this operation was not more than a few minutes, and, during its continuance, the patient, although perfectly conscious, remained quite tranquil. The omentum and intestines protruded from the wound, but were easily replaced, whilst the edges of the wound were brought together by sutures; strips of adhesive plaster and a firm bandage completed the dressing; after which our patient was placed

in a favorable position. The poor woman bore the operation with great fortitude, and expressed herself as being very much relieved, and considered that she had terminated her labor with much less suffering than she had experienced on former occasions. The pulse almost immediately rallied, and the appearances of extreme exhaustion subsided. The child, a female, was considerably above the middle size, weighing eleven pounds and a quarter, and had, no doubt, ceased to exist at the period of the accident. Wine and a full opiate were given, and we left her in a composed state at nine o'clock, under the charge of an experienced nurse, who had instructions to administer nutritious fluids, and, if needful, more wine.

[The patient did not at first appear to suffer from the consequences of this severe operation, but, as might reasonably have been anticipated from the nature of the case, symptoms of peritonitis soon declared themselves, and, spite of a very judicious line of treatment, passed into those of fatal exhaustion. The patient finally sank on the eighth day after delivery.]

*Autopsy.* The abdomen was considerably distended, apparently with gas. The length of the wound in the abdominal parietes now measured four inches, and had united generally by the adhesive process, excepting at some points whence there issued a slight purulent discharge. The divided abdominal peritoneum had become adherent along the wound to the subjacent parts. On breaking down the adhesions, and separating the edges of the wound, a little purulent matter was found. The convolutions of the intestines and the omentum were, in several places, slightly adherent by lymphatic effusion, and this condition prevailed in several places between the contiguous surfaces of the serous membrane. The general peritoneal surface exhibited a slight state of vascularity, and this condition was more conspicuous in the neighborhood of the uterus, which viscus was slightly adherent to the bladder. Four ounces of a darkish-brown fluid were effused into the cavity of the peritoneum, but not at all intermixed with pus. The omentum presented throughout its extent a brown color; but there was no gangrenous appearance in this or any other part. The stomach was healthy, and very slight vascularity was observed on its outer coat. The uterus had contracted to the size to which it is usually reduced about the seventh day after delivery. It presented a perfectly normal appearance, excepting a slightly increased vascularity, and felt firm in its general structure. Its outer covering, as before stated, was slightly adherent to the contiguous peritoneal surface. Upon raising up this organ towards the pubis, a dark-brown ragged opening was discovered, chiefly seated in the posterior wall of the vagina, and apparently extending through a small portion of the cervix uteri. The length of this opening varied, according as it was enlarged by stretching, or suffered to remain in its original state with the parts *in situ*. The variation of the laceration was thus from three to five inches. Besides this longitudinal laceration, there was a considerable transverse division just at the point where the vagina joins the cervix. There had been no attempt to close this lacerated wound by any reparative process; but the contiguous surfaces of the peritoneum had become so generally adherent as effectually to prevent the secretions or discharges from the uterus or vagina from passing into the abdominal cavity. The edges of the lacerated opening were irregular and jagged, and of a dark-brown color, but free from any gangrenous state. The inner surface of the organ presented nothing unusual in its appearance. The pelvis, although apparently well formed, was slightly under the natural dimensions in its antero-posterior admeasurement, and, considered in connection with the large size of the fœtus (eleven and a quarter pounds), was decidedly disproportioned; the head, being firm and unyielding, had resisted the violent action of the uterus from five in the morning till four, P.M., eleven hours.

*Remarks.* We have now to enter upon the reasons which induced us, in this instance, to resort to the formidable operation of gastrotomy.

The suddenly fatal termination in every case of ruptured uterus, attended by an escape of the fœtus into the peritoneal cavity, which had ever been witnessed by myself or friends, induced me seriously to reflect upon the adoption of some other method of proceeding, with a view to afford the unfortunate sufferer from this accident a better chance than has resulted from the ordinary mode of delivery. Fortified by the success of continental practitioners, we determined to resort, in this case, to the operation recorded in this paper.

The subject, as regards the particular practice to be adopted, is necessarily divided into those cases in which the contents of the uterus have escaped into the peritoneal

cavity, and those in which a part or the whole of the fœtus still remains in the uterine cavity. In the latter class of cases the practice is clear; all are now agreed that immediate delivery is to be effected, either by instrumental or manual assistance in the ordinary way. It is the first about which we have to inquire; and the rule laid down in this country has been to deliver *per vias naturales*, excepting in those examples in which there is much pelvic deformity, or an undilated state of the os uteri.

Now, in the present instance, neither of those conditions existed, excepting the former in a slight degree. • The reasons which induced us to resort to gastrotomy were: 1st, the extremely exhausted state of the patient; 2d, the apparently large size of the fœtus, thus constituting a disproportion, even in a pelvis of natural dimensions; 3d, the long period of time which had elapsed since the occurrence of the accident; and, as regarded the method of delivery generally advocated, 4th, the risk of enlarging the lacerated opening in the uterine parietes; 5th, the violence necessarily involved in the delivery by the natural outlet, first through the laceration, and secondly of the head through the pelvis, presenting to our view a hopeless, heartless, proceeding. There appeared to us far less violence, force, and rashness in the simple incision of the abdominal muscles. A conviction filled our minds, that our patient would inevitably have sunk exhausted from the violence necessarily attendant upon the ordinary mode of delivery. Is it not probable that, in cases in which the rupture is in the substance of the uterus, the organ immediately contracts after the expulsion of its contents? and, if so, in dragging the child through an opening, now considerably diminished in size, severe additional violence would be inflicted.

By gastrotomy we moreover offered to ourselves the advantage of a more rapid mode of delivery, less exhaustion, and a complete removal from the peritoneal cavity of extravasated blood. In every case of post-mortem examination which I have made or witnessed, of ruptured uterus, a large amount of fluid and coagulated blood was found in the peritoneal cavity. The immediate result of the operation—a decided revival of the vital powers—more than confirmed our anticipations. As it appears to my view, two distinct advantages, besides those already alluded to, would result from the section of the abdominal muscles in *all* cases of rupture of the uterus, with escape of the fœtus, especially if the operation were made continuous, as it were, with the accident. The first would be a fair chance of preserving the life of the child; the second, the system would not be subjected to two shocks, with an interval, during which, generally, the vital powers are rapidly sinking or become exhausted. The adoption of the practice now advocated would accord with the principle in surgery, of immediate amputation in compound fractures from gun-shot or other injuries.

I am disposed to infer, that lacerated wounds of the vagina, and especially if their direction be transverse, are more difficult to repair, and consequently more fatal in their consequences, than an equal extent of division of the substance of the uterus alone. My reasons for so thinking are derived from the fact,—that in every instance which has come under my own observation, the examination has shown the rupture to have been in the posterior part of the vagina only, or extending into but a small portion of the cervix uteri. Besides wounds of lax membranous parts do not readily keep in contact, whereas the walls of the uterus being firm, the organ, by its contraction, preserves the edges in close apposition, and favors the re-union of the parts.

Now let us endeavor to place in order the various points of our subject:—

1st. There have been recorded a few (one or two?) cases of recovery from rupture of the uterus, complicated with escape of the fœtus into the peritoneal cavity, having been left to chance. Whether these were cases of rupture, or of extra-uterine pregnancy, is now extremely doubtful. They may be classed amongst the fabulous.

2d. There are a few well-authenticated examples of recovery in which the delivery had been effected *per vias naturales*.

3d. A few recoveries have resulted in cases wherein gastrotomy had been the mode of delivery, and equally entitled to our credit.

In again adverting to British practice, as regards the Cæsarian operation, it will, I think, be conceded, that the error has been in procrastination: and perhaps continental practice has overstepped the correct boundary line in its precipitancy; yet it is highly probable more lives have been lost by the adoption of the former than the latter principle. Who would not admit, but that in the two cases detailed by Dr. M'Keever\*

\* Practical Remarks on the Lacerations of the Uterus and Vagina, pp. 14, 82.



there would not have been a better chance of recovery from gastrotomy, than by the practice pursued. In the one instance an ineffectual attempt at delivery in the ordinary mode was made; and in the other, the patient lingered some days, and the fetus was found in the peritoneal cavity after death.

Alluding to cases which would be likely to require the operation of gastrotomy, Dr. Ramsbotham\* observes—"But if I found the patient sinking, if the powers of life were ebbing fast, and particularly if thirty or forty minutes had elapsed since the rupture, and the movements of the fetus had quite ceased, I should by no means sanction the incision, because of the *painful nature* of the operation; and because I should presume it would *avail nothing*, and might probably hasten her death." Now some of the reasons which would influence Dr. Ramsbotham not to resort to gastrotomy, were just those which induced me to avail myself of it. Just as the patient was sinking, so should I hasten to remove the cause, or one of the causes—the presence of the child amongst the viscera of the abdomen. Besides, the operation is not comparatively a painful one; certainly not so painful as that of amputation or lithotomy; and its duration, as applied to these cases, is very short, not more than two minutes. Instead of causing increased depression, the patient revives under it, as was the case with our patient, who immediately declared that she had experienced but very little pain, far less as regarded the operation than on the occasions of her former labors.

I can fully bear out the opinion of Dr. M'Keever, in his Essay, that this dreadful accident occurs more frequently amongst the lower ranks than the higher; and I would suggest whether this result does not arise from the greater frequency of deformity of the pelvis as the consequence of rachitis or scrofula in the former class; and hence, it is highly probable that in large towns, where poverty and unhealthy occupations prevail, and especially where children are engaged in cramped or restrained positions, as in cotton factories, &c., we shall find a higher ratio of this kind of difficult and dangerous parturition. I judge from the results of my own practice, during a period of upwards of thirty years, and from the information I have been enabled to collect from the practitioners in this town, who have had the most extensive opportunities, that rupture is exceedingly rare in this district. Four cases have come under my own immediate notice, of which one was in my own practice, and the other three in consultation. In calculating the relative frequency of rupture of the uterus during the last twenty-five years in this district, it would probably be not far from a correct average to fix it at one in five thousand.

It would further appear that Dr. Hunter's and Dr. Denman's original opinion and practice (non-interference) is still acted upon by several surgeons of the present day, and cases of rupture of the uterus are still left to chance.

ART. 92.—*Clinical Researches on Ulcerations of the Cervix Uteri.* By M. BOYS DE LOURY, Senior Surgeon to the Hospital of St. Lazare, and M. COSTILHES, M.D.

(*Gazette Médicale*, Juin, 1845.)

In alluding, in the course of our retrospective labors of the last half year (vide Half-yearly Abstract, vol. i., p. 236), to some excellent papers published in the *Lancet* by Dr. Bennet, we expressed our conviction that the inflammatory conditions to which the uterine neck is subject, are not duly appreciated in this country, and that a more general acquaintance with that branch of pathology would afford a key to many of the anomalous disorders of the female system which are at once the annoyance and opprobrium of the British medical practitioner. We are happy, therefore, in having the opportunity of laying before our readers the present abstract of a series of essays in the course of publication in the *Gazette Médicale* of Paris. The first paper commences with an account of the institution to which the authors are attached, and after giving minute directions for the introduction of the speculum and the practice of the *trocár*, proceeds to the consideration of the different forms and dimensions of the cervix and os uteri.

On the dimensions and different forms of the cervix and os uteri. In studying this subject, two grand divisions are usually acknowledged; that of women who have not, and that of women who have had children. It is a generally received opinion that the

\* Dr. F. H. Ramsbotham's *Obstetric Medicine*, p. 601; 1841.

cervix uteri in women who have borne children is more tumid, and that the os is more patulous than in virgins; the authors consider that the opinion is too exclusive, and state that they have met with many exceptions to it. They likewise observe that after the critical period, it is not uncommon for the neck of the womb to resume its primitive condition.

It is not easy to give the exact physiological dimensions of the uterine neck; but this is a point of great importance, for it is indubitable that many regard, on the one hand, that as an engorgement which is but a natural condition of the parts; and on the other, consider the organ to be sound, when it is really diseased. The smallest cervix which the authors have met with had for its greatest lateral diameter 1½ centimetres,\* for its antero-posterior diameter 1 centimetre. The largest size, free from engorgement, is always 3 centimetres at least in its lateral dimension, with an antero-posterior diameter of 2 centimetres.

In consequence of this difference in diameter, the uterine neck has an oval shape, so that, observe the authors, whenever the antero-posterior diameter equals the lateral it is a proof of engorgement.

In its healthy state, the cervix uteri usually presents the form of the segment of an ovoid; at other times, especially in barren females, it assumes a more conical shape. The os uteri in women who have never miscarried or borne children, seldom exceeds five or six millimetres in length, unless it is of a more than commonly rounded shape, when, of course, its diameter is less.

In women who have borne children, the os uteri is generally increased in size, and has a torn or lobular appearance, and is at the same time more or less patulous.

In pregnant women, the lips, &c., of the os uteri, as has been remarked by M. Marc d'Espine, are soft and swollen, and the orifice is so wide as readily to admit the finger.

In menstruating females, it is, for the most part, agreed that the finger may be passed into the os; this statement does not accord with the author's observations.

The position of the cervix is not uniform. It is seldom that it is situated directly in the centre of the vagina, as there is generally a slight *anteversion* of the organ, with obliquity to the right or left, most frequently the latter. This can only be ascertained by the *toucher*; for the speculum by its pressure restores the organ to its central position, and we thus overlook a conformation which is perhaps the direct cause of the symptoms for which we are consulted.

*On ulcerations of the cervix uteri.* The authors study this form under its different degrees of severity, and treat in the first place of the

*Simple ulcer or erosion.* The initiatory stage of the simple or mild form of ulceration consists of a redness of greater or less intensity, most pronounced on the lower lip of the os tincæ, but extending over the entire surface of the cervix, and not accompanied by any great degree of pain. If this redness should increase, the organ becomes tumefied, and at the same time of a deeper color, and the engorged capillaries bleed upon the slightest touch. Under these circumstances ulceration soon ensues, commencing either in one or many points at the same time. The erosion, though it sometimes invades the whole cervix, is most generally confined to a space not exceeding from four to six millimetres around the os, and rarely proceeds to a greater depth than the thickness of the epithelium.

This is the ordinary mode of formation of the simple ulcer or erosion; but they occasionally arise after a different manner. The authors state that they have occasionally noticed small pustules disseminated over the cervix, which form rounded ulcers by their spontaneous rupture. When this event has taken place, the ulceration cannot be distinguished from those which originate in the redness of the mucous membrane above mentioned. In either case a more or less abundant discharge is established as soon as the solution of continuity has occurred.

The treatment of this form of ulceration is simple, and consists for the most part of emollient or gently astringent injections, warm baths, and rest, with abstinence from coition. Bloodletting, either general or local, is seldom or never required. In some cases, however, it may be necessary to cauterize the parts mildly with lunar caustic once or twice a week, in order to modify the vitality of the mucous membrane.

The authors terminate this section by the mention of a variety of superficial ulcer-

\* The French centimetre is 0.393 in. and the millimetre is 0.039 in.

ation, which is of rare occurrence, but very troublesome to cure. It is thus described: "This form of the disease occurs under three different grades. 1. It consists of a puffy erosion, which is soft to the touch, bleeds readily, and is elevated above the level of the sound portion of the cervix. The discharge to which it gives rise is yellow or yellowish green, and always abundant. 2. Sometimes it has a granular aspect, but neither bleeds nor gives rise to any discharge. And 3. In some cases it is seen in the form of a large smooth erosion covered with a tenacious transparent exudation.

"This variety of ulceration is rare; we seldom meet with more than two or three instances in a year, and these are in women who present more or less engorgement of the cervix, and complain of a sense of bearing down, with pains in the hypogastric region."

*The diphtheritic ulcer.* "We are not aware that this form of ulceration of the cervix uteri has ever been described: its characters are, nevertheless, of sufficient importance to deserve a separate mention, since it may be readily confounded with syphilitic ulceration, to which, at first sight, it has considerable resemblance.

"As in the case of diphtheritic angina, the complaint begins with redness and pain, but at this period there is no discharge. In a few days, however, the diseased surface puts on its characteristic appearance, which is that of *small, whitish, smooth and shining patches of different and irregular forms.*

"These patches are extremely adherent to the cervix uteri, so much so that the most forcible injections, or even friction with lint, fail to detach them. At the end of a few days, however, they fall off spontaneously, leaving an ulcer of a simple aspect which cicatrizes with the greatest facility." The authors are undecided as to the cause of this ulceration, but are inclined to attribute it to a specific action. Their chief object in alluding to it is to distinguish it from syphilitic disease. The latter form of ulcer is characterized by its *depth and irregularity of form, its surface being covered with a greyish pellicle.* If there should be any doubt, it is resolved by the very superficial erosion which is seen after the detachment of the pseudo-membranous patches of the diphtheritic variety.

The treatment of this form is purely local, the application of a weak acid to the ulceration is the only indication to be fulfilled. The authors are accustomed to trust to the hydrochloric acid, followed by alum injections, and the warm bath.

*Linear ulceration (Fissure).* The third form of ulceration noticed by the authors, consists in that which occupies the bottom of those fissures of the os uteri which commonly attend upon abortion or difficult parturition. These ulcerations are very apt to escape detection, as they are frequently seated upon the internal aspect of the os. The only way in which they can then be brought into view is by pressing the valves of the speculum forcibly backwards, so as, as far as possible, to invert the os uteri. This form of ulceration, as it extends, is usually accompanied by engorgement of the neck of the womb, which increases in proportion to the depth of the ulcer. It is sufficiently easy of cure if taken in time, but if not discovered until the engorgement is considerable; the cure is rendered exceedingly difficult. The treatment by occasional cauterization with the nitrate of silver will succeed generally, in recent cases, in curing the patient in the space of a few weeks. The patient must, however, be told that the few first applications of the caustic are liable to be attended with, hemorrhage. In the more advanced cases, complicated with engorgement of the cervix, it will be necessary to premise the caustic treatment by the application of leeches or other local antiphlogistic means.

*Fungous ulceration and vegetation of the cervix uteri.* This kind of ulceration is frequently seen in women who have borne many children. It generally supervenes upon some milder form of disease, which has been neglected, and seldom appears as an initiatory form of disease; in fact, it is no more than is observed in neglected sores on other parts of the body. This variety of ulceration is covered with fungous elevations, which may sometimes give rise to the suspicion of malignant disease. It is generally accompanied with a sensation of weight in the hypogastric region, and gives rise to a more or less abundant muco-purulent discharge. It is not, however, painful to the touch. Menstruation is generally disturbed, being too abundant, and the periods too frequently repeated. Although the fungous ulceration does not ordinarily induce serious consequences, it is difficult of cure. It is not unusual to see women under treatment three or four months before cicatrization can be obtained, and then not without the employment of energetic remedies.

In the treatment of these ulcerations, the authors do not find the ordinary caustics, as the nitrate of silver and the acid-nitrate of mercury, of sufficient power; they have therefore recourse to the Vienna caustic,\* made in a solid form, which they apply once or twice in the week, according to circumstances. When the surface of the ulceration is completely changed, this powerful caustic may be replaced by the stick of nitrate of silver. As auxiliaries in the treatment, the authors recommend the application of the strong mercurial ointment, applied by means of lint; as also emollient and astringent injections.

*Granular ulceration.* This form of ulceration is characterized by small granular eminences, similar to those which are seen in granular conjunctivitis, and which speedily ulcerate. The affection is in general superficial, and very accurately defined; it most commonly attacks the lips of the os uteri. It is in general rebellious to treatment, requiring, in most cases, two months for its cure.

The authors dispute the opinion of M. Gibert, that the granular ulceration is of venereal origin; in their experience, it has occurred in women in whom no suspicion of the kind could be entertained, and it has been permanently cured without the use of any mercurial.

In the treatment, M. Gibert uses an alcoholic solution of tannin as a topical application, and submits all his patients to a mercurial course. The authors recommend slight cauterization with nitrate of silver, and absolute rest.

*Syphilitic ulceration.* True chancre having its seat in the cervix uteri is not a common occurrence. It has been confounded by many writers, and by M. Duparque among the number, with secondary ulcerations; MM. Cullerier and Ricord, whose experience has been great, seldom meet with more than four or five cases of true chancre in these parts during the year. Chancrous ulceration commences by the tumefaction of one or more mucous follicles, which ulcerate at their summit, and rapidly enlarge in their circumference. Their aspect, when fully formed, has been alluded to when speaking of the diphtheritic ulcer. The authors have never witnessed either induration of the edges of the sore, or buboes in the groin. The treatment employed by them consists, first, in a general anti-syphilitic medication; and, secondly, early cauterization, so as speedily to alter the character of the sore. They subsequently apply aromatic wine, or mercurial ointment, by means of a pledget of lint.

*Ulceration of the cervix uteri during pregnancy.* It is a matter of surprise that the influence of the pregnant state upon ulceration of the neck of the womb has been so little attended to. It is, nevertheless, of the highest importance to have a due appreciation of this coincidence; for it is to the effect of these ulcerations that many of the miscarriages, so common in young females, are to be attributed. This affection is far from uncommon, but as yet few practitioners are aware that ulcerations of the neck of the uterus put on altogether a different appearance, and have an entirely different import accordingly as the womb is empty or impregnated, and that it is possible, by judicious treatment, to prevent an almost inevitable miscarriage.

The most common cause of ulceration in pregnancy is excessive intercourse, but it was in many cases the result of previous abortion, and existed prior to the pregnancy during which it was discovered. These ulcerations constantly present themselves under the same aspect, which is that of irregularly round fungous sores, generally of a violet hue. They are accompanied by more or less engorgement of the cervix, and give rise to lumbar and hypogastric pains. The discharge is always of a yellowish white, and never green, and abounds in proportion to the extent of the ulceration.

Ulceration existing in the pregnant state is always more tedious than when it occurs previous to conception; and is a serious lesion, inasmuch as it has a great tendency to induce abortion. It may, however, be remedied by a suitable treatment in the majority of cases. This treatment is by the means of caustics, the best of which, according to the authors, is the solid Vienna paste. Their mode of using it is as follows: "After having cleansed the diseased part of the mucous and purulent secretions in which it is enveloped, we brush over the ulceration with the caustic, and afterwards fill the vagina with soft lint. This plug is to be removed at the end of twelve hours, and an astringent injection is to be thrown up. This is repeated until the ulcer exhibits a granulating surface."

[We shall omit the observations of the authors upon the subject of cancerous ulcera-

\* For composition of this caustic, vide "Half-yearly Abstract," vol. I., p. 66.

tion of the neck of the womb, as nothing is adduced which in the slightest degree adds to our previous acquaintance with these hopeless cases. The reader's attention may be drawn with more profit to the remarks upon the engorgement of the parts. . They enter upon the subject with a brief discussion of the opinion maintained by many writers, that engorgement of the neck of the uterus in all cases precedes the ulcerations. This they refuse to admit as a general rule, although they do not deny its occasional occurrence prior to the lesion of the mucous membrane.]

Engorgement of the cervix uteri may be general or partial; in the latter case the lower segment is the one most commonly affected. The os uteri in such instances is much distorted. Engorgement is seldom seen in young girls, ulceration alone being the ordinary event. After the age of twenty-two, on the contrary, ulceration rarely occurs without more or less engorgement. The cause of this is undoubtedly the violence to which the part is exposed in sexual intercourse, and especially in abortion or laborious deliveries.

Upon examination by the *toucher*, an engorged cervix feels hard to the finger, whether there be ulceration or not. The surface is irregular and mamillated. The local symptoms are a feeling of weight and tension, painful sensations in the groins and thighs, and difficulty in walking. The action of the bowels is sometimes dreadfully painful, so much so as, in some cases, to cause fainting. When the malady has existed for a length of time, it makes great inroads upon the constitution, fever arises, and the patient falls into a state of marasmus. In the majority of cases, an opaque or puriform discharge forms a prominent symptom. Menstruation is irregular, either as to period or quantity, and accompanied with more or less dysmenorrhœa.

[The diagnosis between simple engorgement and scirrhus is thus laid down by the authors:] The rugosity of the cervix, although evident in engorgement, is not so highly marked as in scirrhus, neither is the hardness so considerable in the former as in the latter. There is, however, the same feeling of weight in the pelvis, the same difficulty in walking and standing; but the pain is of a character in scirrhus, which cannot be mistaken, a plunging or dashing pain. In many cases, however, it must be allowed that great circumspection is required in arriving at a correct diagnosis. Time only will elucidate the point. The ulcerations, however, in simple engorgement, are not deep, neither is the discharge sanious or fetid, as in cancer. The little effect of treatment also in the latter, as compared with the former, gives great certainty to the diagnosis.

[Simple engorgement of the cervix uteri is not in general a serious malady. It causes, it is true, severe suffering, but under proper treatment, it is readily cured. The treatment recommended by the authors consists, in the first instance, in repeated small bleedings from the arm, proportionate to the age and general powers of the patient. In most cases, however, local abstraction of blood by leeches is found sufficient. When the complaint is chronic, as usually happens before the patient seeks advice, the authors have experienced little benefit from antiphlogistics, either general or local. In these cases they apply a plaster, composed of Burgundy pitch, mixed with four grammes of tartar emetic, to the sacrum, allowing it to remain eight or ten days. At the same time the patient is made to take warm baths, and to use astringent injections several times a day. If there be a copious discharge, proceeding from uterine catarrh, it must be combated by mild antiphlogistics, in addition to which the authors recommend a tincture of cubeba, of the strength of 60 grammes of the powder to 250 grammes of spirit. The dose a teaspoonful twice a day. If the discharge resists this treatment, they have recourse to cauterization of the interior of the cervix with the *argenti nitras*. The more obstinate forms of engorgement are treated by cauterization, either with the hot iron, or the solid Vienna paste. The mode of employing the latter caustic will be most readily understood by a perusal of the following remarks, which we extract from Dr. Henry Bennet's recent and valuable work on the subject of the present article:]

"If the Vienna paste is employed, the following is the plan pursued by M. Gendrin, which I likewise adopt. I must first, however, state that the Vienna paste, which is much used in France to produce deep eschars, is formed of equal parts of quicklime, and hydrate of potassa, reduced to a fine powder, and intimately mixed. The powder should be prepared only when wanted, and kept in a glass-stoppered bottle. To be used, it is made into a paste with a few drops of alcohol, and the paste is then spread over the part to be destroyed. Its action is very prompt, and accurately circumscribed

to the part to which it is applied. A thin layer of the paste, for instance, will destroy the entire thickness of the skin in three or four minutes, and that with but little pain to the patient.

"When applied to the uterine neck, a large and conical speculum must first be introduced, and the engorged cervix made to enter its orifice; or should the cervix be too voluminous, the speculum must be firmly pressed on the part which it is intended to cauterize, great care being taken not to enclose between the rim of the speculum and the cervix, a fold of the vagina. About as much of the paste as will cover a four-penny-piece, a line in thickness, must be placed on a triangular piece of diachylon plaster, one end of which is inserted lightly into the cleft extremity of a small stick. The caustic is then carried by means of the stick to the cervix, and applied to the centre of the part comprised within the orifice of the speculum. With long forceps, cotton is placed carefully all around the spot on which the caustic is applied, so as to completely protect the neighboring parts. The stick having been withdrawn, the speculum is to be two thirds filled with cotton or lint, which is firmly pressed against the uterine neck. The speculum is then extracted, the cotton which fills it being forcibly pushed back in the vagina with the forceps, as it is pulled away, so that the passage remains thoroughly plugged. If all this be carefully done, it is impossible for the caustic to fuse, and to injure the parietes of the vagina. In about fifteen or twenty minutes, the cotton or lint is to be gradually withdrawn by means of a bivalve speculum, and an eschar, the size of a shilling, will be found where the caustic was applied. The vagina should then be washed out with tepid water, complete rest in bed enjoined, and emollient injections employed until the separation of the eschar takes place, which is generally on the sixth to the eighth day."

[Dr. Bennet remarks, that this deep cauterization creates very little more disturbance of the system, than the superficial by the nitrate of silver. Inflammatory symptoms sometimes, however, arise, which require leeches, &c.: but to show how seldom this happens, Dr. Bennet states that he has seen every week, for three years, one or more patients thus treated, but that he does not recollect a single instance in which severe consequences ensued.]\*

ART. 93.—*On the Management of Dystocia arising from Arrest of the Head in the Pelvic Cavity.* By EDWARD MURPHY, M.D., Professor of Midwifery at University College, late Assistant-Physician to the Dublin Lying-in Hospital.

(*Lancet*, July 12, 1845.)

[The observations which will be found below form a part of a valuable series of lectures upon the "Mechanism and Management of Natural and Difficult Labors." After describing the various causes of delay in the second stage of labor, whether depending upon the conformation of the child or of the mother, the author points out the danger which arises from the occurrence of inflammation of the uterine passages, and from *exhaustion* of the uterus; the latter of which conditions is shown to be very frequently misunderstood. Some remarks then follow upon the general treatment of protracted labors, after which the author enters upon the subject of arrest of birth from disproportion between the head and the pelvis, in these words:]

It is hardly necessary to state that there is every variety in the degree of disproportion between the head and the pelvis. In some instances it is so slight, that the woman may be safely delivered without assistance: in others the amount of difficulty may be so increased as to render it doubtful whether the head can pass without assistance; and it is in these cases that the rules of practice are the most contradictory. Again; you may have a still greater disproportion, in which there is no doubt about the improbability that the head can be expelled by the natural efforts of the uterus, although there is very great doubt, and no little dispute, as to the means by which the head must be extracted. Lastly, you have occasional instances in which the narrowness of the pelvis is such, or the magnitude of its distension so great, that the safe delivery of the child is hopeless; the head must be lessened; it must be destroyed before it can be brought into this world. In extreme cases of this kind, even this cannot be done, but recourse must be had to the difficult and dangerous operation of removing the child from the

\* *Practical Treatise on Inflammation, and of the Neck of the Uterus*, p. 175.

uterus by laying it open, in order to save the mother from the dreadful alternative of dying undelivered.

In those cases of slight deviation from the standard pelvis, where there is every evidence of space sufficient for the head ultimately to pass through the pelvis, if nature be allowed time for the purpose, you would not, of course, interfere with her, although I believe instances might be quoted, where *very adroit operators* have, even in such cases, relieved the tedium of a long attendance by a ready application of the forceps. It is sufficient to say, that the united testimony of the profession, given in every standard work of midwifery, is opposed to such a practice, and if any accident should arise from this mischievous meddling, the operator is fully responsible for all the consequences that follow from it. But in those more doubtful cases, in which there seems hardly sufficient space for the head to pass safely through the pelvis, the practice is not so clear, nor is the evidence of the profession so unanimous on the subject. When, in such instances, the head is actually arrested, and so remains for some hours in the same position,—a sufficient length of time to satisfy you that the uterus cannot advance it,—if the ear can be felt, or the finger be passed easily between the head and the pubis, you may use the forceps to deliver the child, and I think the weight of authority will support your practice. But when the head is not so arrested, you have here the discordance of authorities at once confounding you. Burns devotes the greater part of a chapter (Burns, chap. vi., p. 428) to prove the impropriety of delay under such circumstances, and advocates the application of the forceps in cases of arrest; because, “in such cases, then, we may experience much evil from trusting too long to nature, but add little to the sufferings of the patient, and nothing to her hazard by instrumental aid.” He applies the same principle to cases of impaction, which we shall presently consider. The evil he dreads is uterine exhaustion, if this second stage be much prolonged. In this view he has the support of the late Professor Hamilton, who equally dreaded delay. Dr. Campbell also gives a similar opinion, but more guardedly expressed: “It may, however, be repeated, that while the delivery is advancing, and the patient continues free from unfavorable symptoms, the use of the forceps is to be abstained from altogether. *But whenever the progress is slow and imperceptible*, and the subordinate means already recommended have failed to accelerate the transit of the fœtus, the case should be watched, and *this instrument applied with very little delay after the passages are prepared.*” (Campbell’s Midwifery, p. 281.) Other names might be added to this list of advocates for interference in the case supposed. But let us turn to the other side, and you will find the eminent names of William Hunter, Osborne, and Denman, opposed to this practice. Dr. Osborne would wait till exhaustion had actually taken place,—a maxim for which he has been very severely, and, I admit, very justly criticised. Dr. Denman’s fifth aphorism states: “It is meant, when the forceps are used, to supply with them the insufficiency or want of labor-pains, but *so long as the pains continue*, we have reason to hope they will produce their effects, and *shall be justified in waiting.*” (Denman’s Aphorisms, p. 12.) When the pains cause the head to advance, although very slowly, they are producing their effect, and the case therefore comes within the limits of the aphorism. Dr. Collins observes: “Let it be carefully recollected at the same time, that so long as the head advances *ever so slowly*, the patient’s pulse continues good, the abdomen free from pain on pressure, and no obstruction to the removal of urine, interference should not be attempted, *unless the child is dead.*” (Collins’s Report, p. 18.) Dr. F. Ramsbotham’s third rule on this point is: “If the head advance at all, and be not impacted, provided the strength and spirits are good, there is seldom need to interfere.” (Ramsbotham’s Obstetric Midwifery and Surgery, p. 309.) Dr. R. Lee’s name might also, I think, be added, as being favorable to this rule of practice.

I shall not, gentlemen, so far trespass on your patience as to ask you to unravel with me this tangled web of contradictory experience. It is sufficient if I convince you of the difficulty of the subject, and if it induce you to give a patient attention to the only mode I can adopt to draw a legitimate conclusion: that is, to derive it as nearly as possible from facts; which I think may be done without reference to these opinions. Bearing in mind that the great and leading principle to be observed in these difficult cases, is to preserve both mother and child, if possible, from injury, I think it is in our power to compare the results of cases where the forceps had been applied with those where they have been withheld, and thus determine the practice which presents the greatest success.

We shall first direct your attention to the following tables of Operative Midwifery, derived from reports given by British and foreign practitioners; you will find in them the total number of cases given by each, the number of forceps operations, and the results to mother and child, when they are given.

You will perceive that in these tables, the number of forceps operations in British practice is 138; in 30 of which the child was still-born, being in the proportion of one in every fourth case. In order to prevent error in this proportion, we have separated Dr. Lee's forceps cases, the total number of which, given by him, is 55, the mortality of children is 38, which would be quite out of proportion (being more than one half), if these cases were not carefully examined. I have endeavored to do so, and to make the necessary corrections. In 19 of these 55 cases the forceps failed, they therefore became cases of perforation; of the remaining 36 cases, one half of the children, eighteen, were lost, but twelve of these eighteen were destroyed by other causes than the forceps. Deducting, therefore, all such cases from the whole number the remainder

COMPARATIVE VIEW OF FORCEPS OPERATIONS AND PERFORATIONS.—BRITISH REPORTS.

Date.	Place.	Name.	Total Cases	Forceps.	Deaths. Children, Mothers.	Perforations.	Deaths. Mothers.	Total Operations.
1781 . . .	London . .	Dr. R. Bland . .	1,897	4	—	8	—	12
1828 to 1843	Ditto . .	Dr. Merriam . .	2,947	21	6	9	—	30
1787 to 1793	Ditto . .	Dr. F. Rambodham .	35,745	49	11	3	6	87
1826 to 1833	Dublin . .	Dr. J. Clarke . .	10,387	14	—	2	16	63
1835 to 1837	Ditto . .	Dr. Collins . .	16,414	24	8	4	15	103
1835 to 1840	Ditto . .	Dr. Beatty . .	1,182	9	4	—	3	12
1835 to 1840	Ditto . .	Dr. Churchill . .	1,640	3	1	12	1	15
1832 to 1835	Ditto . .	Dr. Murphy . .	6,699	14	5	1	6	43
	London . .	Dr. R. Lee . .	75,911	138	35	10	227	365
				55	38	9	127	165

## FOREIGN REPORTS. FRENCH.

1797 to 1811	Paris . .	Boivin . . . .	20,357	96	23	26	—	112
1812 to 1830	Ditto . .	La Chapelle . .	22,243	77	18	2	—	89
			42,600	173	41	28	—	201

## GERMAN.

1821 to 1825	Wurtemberg .	Riecke . . . .	221,923	2,740	336	127	98	35	2,838
1801 to 1821	Vienna . .	Boer . . . .	26,965	100	—	—	43	—	143
1797 to 1827	Ghent . .	Jansen . . . .	13,365	341	—	—	5	—	346
1811 to 1827	Prague . .	Mochner . . . .	12,329	120	—	—	4	1	124
1815 to 1827	Bonn . .	Kilian . . . .	9,392	120	—	—	4	—	124
1814 to 1827	Dresden . .	Claus . . . .	2,549	184	—	—	9	—	193
1817 to 1828	Berlin . .	E. Liebold . . . .	2,093	300	—	—	1	—	301
1823 to 1827	Ditto . .	Klingé . . . .	1,111	68	214	—	8	3	76
	Heidelberg .	Naegele . . . .	1,711	55	—	—	5	—	60
			291,438	4,028	650	127	177	39	4,205



will be 24 forceps cases, in which eighteen children were saved and six lost; being in the same proportion, one in four.

In the French Reports, forty-one children were lost in 173 forceps operations; being one in four, nearly.

In the German Reports of Riecke and Kluge, which state the mortality of the children, the number of their forceps operations united is 2808, the deaths of children 650; being also one in four, nearly. Thus, then, we may conclude that one-fourth of the children delivered by the forceps are lost. What is the result when these protracted cases are left to themselves? Is the mortality increased? I do not think such will be found to be the case. In order to determine this question, I must refer you to Dr. Collins's valuable report—the only report which, from its extreme accuracy and minuteness, affords the elements upon which to form a calculation. Dr. Collins has given tables to show the duration of labor in all the cases he reports; he has also given separate tables to show the duration of labor in forceps cases, and in those which were preternatural. We may also assume, perforation being only had recourse to “when, after the most patient trial, the impracticability of labor being terminated in safety by any other means was clearly proved” (Collins, p. 32), that all these cases exceeded twenty-four hours. From these data, then, we shall endeavor to draw a fair conclusion.

*Cases of Labor protracted to twenty-four hours and upwards, from Dr. Collins's Report.*

Total cases, 430.		Still-born Children, 150.	Mothers dead, 40.
Preternatural cases,	15	Still-born, . . . 6	Dead, . . . 0
Forceps cases, .	12	Ditto, . . . 4	Ditto, . . . 0
Perforations, .	79	Ditto, . . . 79	Ditto, . . . 15
	106	89	—
Delivered naturally,	324	Ditto, . . . 61	Ditto, . . . 25

From this table, you perceive that of 430 cases, in which labor lasted twenty-four hours, or exceeded it, 324 of them were natural cases, delivered without assistance; and that of these 324 the children were lost in sixty-one instances, which would be about one in five cases. The result of my own inquiries on this subject is nearly similar, and has been obtained from a similar source, the Dublin Lying-in Hospital. In 5599 cases, 218 were protracted to this degree; and of these, 175 were delivered naturally, and forty-one children were still-born; being one in four, nearly. Thus, then, you perceive that taking the widest, and, we would say, the fairest view of this question, the proportion of children in these difficult and protracted cases is nearly the same, whether the forceps be employed or otherwise; that the difference, if any exist, is in favor of Dr. Collins's practice, of leaving these cases to nature. But this is only one view of the question.

It may be said, and has been said, in the energetic language of Dr. Burns, that the mother must be considered. “From the strength of the recommendations of the partisans of nature, we should suppose that whenever the child could actually be born without aid, no hazard occurred; and, on the other hand, that instruments must of necessity prove not only very painful in their application, but very dangerous in their effects. Now, the first supposition is notoriously wrong, for innumerable instances are met with where the mother does bear her child without artificial aid, and much, doubtless, to the temporary exultation of the practitioner; but, nevertheless, death does take place, or, at the best, a tedious recovery is the consequence.” (Burns, p. 434.) Is such the case? It is totally contrary to my personal experience; on the contrary, I have been surprised at the rapid recovery of patients who have suffered this protraction, when I had erroneously anticipated, from that very circumstance, all the unpleasant consequences here detailed. But I would again ask you to put aside, for the present, individual experience, and examine facts. In doing so, our data are more limited than those which assisted us in the former question, because, in the French Reports, there is a most ominous silence regarding the mortality of mothers,—they say nothing about it. In the German Reports we are limited to that of Dr. Riecke, who gives 127

deaths in 2740 cases; being one in twenty-one, nearly. But take Dr. Churchill's more extensive researches on this question, from whose valuable work on operative midwifery these tables of foreign practice are partly formed. He states, that "amongst the French and Germans, in 479 cases, thirty-five mothers were lost, or about one in thirteen." (Churchill's Operative Midwifery, p. 134.) Dr. Churchill gives the proportionate mortality in British practice as one in twenty-one; but you will perceive that, in the comparative view we have placed before you, there were ten deaths in 138 cases, which is about one in thirteen. Compare this with the result where the cases have been left to natural efforts. In Dr. Collins's Report, there were 25 deaths in 324 cases, or one in thirteen: precisely the same as where the forceps had been used. Among those cases which I have observed, there were eight deaths in 175 cases, or one in twenty-two,—a proportion in which I can place more confidence, because it is derived from personal observation.

With regard, then, to the second question, the mortality of the mother, take the estimate in any way you please, and you must arrive at the same conclusion, viz., that the mortality is certainly not increased when these cases are not interfered with, and all the dreaded consequences which Dr. Burns anticipates from such practice have no foundation in fact. But we might even go farther: we might even say, that so far from such evils following our practice, the evidence seems to point the other way, and to prove that the actual mortality is diminished. The twenty-five deaths reported by Dr. Collins, include cases of puerperal fever, and other causes of death which might be called accidental, because he gives, under a distinct head, the number of deaths the "effects of tedious and difficult labors." (Collins, p. 365.) These are just eleven cases, or one in thirty cases, nearly. The eight deaths which took place under my own observation include three deaths from puerperal fever, leaving only five deaths from the severity and protraction of labor, which would be in the proportion of one in thirty-seven cases. Caution, however, is necessary when we would derive a just conclusion from statistics. It is, therefore, possible that if the reports of these forceps operations were more fully given, so as to separate the deaths from accidental causes from those resulting from the operation, the proportion of mortality would be diminished in the same ratio. We do not wish you to assume more than what we think has been proved, viz., that the mortality of the mothers is not increased by leaving these cases to nature. The safety of the mother or the child cannot, therefore, be advanced as a reason for instrumental delivery, when the head is making a very slow but certain progress.

One argument, however, has been much used by the advocates for interference, which is very clearly expressed by Dr. Burns. "Granting," he observes, "the recovery to be excellent, is it no consideration that the patient has been subject to twelve, perhaps twenty-four hours of suffering of body, and anxiety of mind, which might have been spared?" (Burns, p. 434.) You must perceive that, if this argument be worth anything, it will admit of a much more extended application than Dr. Burns would give it. It might be employed to justify the use of the forceps in every case where the head was within reach, and labor at all severe. Because, why should the patient be exposed to *any* bodily suffering or anxiety of mind, if it were in your power to relieve her of her miseries? On this principle the forceps might be used (as indeed they have been used) in every tenth case, and the practitioner relieved from the most anxious portion of his duties. But the design of nature will not thus be thwarted, and we might reply to such an argument in the language of Naegele: "If we admit that proportionate difficulties, according to the constitution of each individual, and an effort of strength (requisite in childbirth), are inseparable from the nature of this process, we must conclude, that *an abbreviation of this process, though performed by an able hand*, before the salutary change, on which the preservation of health depends, has taken place in the organization of the mother,—that a premature and sudden removal of these difficulties cannot be a matter of indifference; that such a violent interference with the functions of nature must incur the risk of destroying the health, though this should not ensue for some time after." (Naegele's Mechanism of Parturition, by Rigby, p. 88.) A more immediate injury, however, sometimes follows the application of the forceps in the case we are supposing, as well as in cases of impaction, which we have to consider. The pressure of the instrument may cause slough of the neck of the bladder or urethra, and thus establish a fistulous opening into the vagina; and the incontinence of urine that follows, renders the patient's life miserable

afterwards. It is difficult, in all instances, to trace this accident to the use of the forceps. When a forceps case is described to us, we are seldom told that any mischief is the consequence. The splendor of success is very dazzling, and, while we admire the operation, we are too often left in the dark as to the rest. Nevertheless, I have been able to trace this accident clearly to the use of the forceps in several instances. The usual account of the patient is, "that she had been delivered by instruments, and the child's life saved." Dr. R. Lee, in his "Clinical Reports," gives a candid and clear statement of the results in the forceps cases he details: "Four died from the rash and inconsiderate use of the forceps; seven had the perineum more or less injured; one had the recto-vaginal septum torn; five were left with cicatrices of the vagina, after sloughing; and one with incurable vesico-vaginal fistula." (Clinical Midwifery, p. 32.) Dr. Collins records only *one case* of vesico-vaginal fistula in the whole of his report of 16,654 cases,—that was a case of perforation,—consequently this accident was never found among those cases which were delivered naturally. The only case of fistula which occurred in the 5,699 cases to which I have so often referred, was one in which I employed the forceps to deliver a child that presented the forehead. The principal cause of difficulty in Dr. Collins's cases was the large head of the male child forcing its way through a very osseous pelvis; the pressure on the soft parts must be very great, and if fistula could be produced by great protraction of labor in cases that ultimately were delivered without assistance, it must have been an accident of frequent occurrence in these cases, when the soft parts were so much compressed; but such did not happen, and therefore they afford a very favorable contrast to the cases delivered by the forceps in nearly similar circumstances. The intelligent practitioner would therefore hesitate before he exposed his patient to the risk of vesico-vaginal fistula, for the mere gratification of shortening the severities of nature.

We have reluctantly been compelled to dwell longer upon the management of this degree of disproportion than we desired. The difficulty of the question it involves, and the contradictions among the most experienced writers, must be our apology. In the case that we are considering, that in which the second stage of labor is protracted, and the head of the child advancing *very slowly*, we have shown you that there is no increased danger to the mother or child by leaving the case to nature, in place of delivering by the forceps; that if there be any difference in the ratios of mortality, it is in favor of non-interference, and rather against the forceps. We have pointed out, as far as imperfectly detailed facts would enable us, that the post-partum accidents of labor follow operations with the forceps more frequently than cases which are left to themselves, and, consequently, the conclusion at which we must arrive, is hostile to the use of that instrument, under the circumstances stated. But, recollect that there is no general rule without an exception; and you will sometimes meet with patients so feeble in their habits, that they will not endure a protracted labor, without great risk of exhaustion; you may be called to patients where you dare not temporize; whom you must deliver, although the head is making a tardy progress. We only ask you to consider these as the exceptions, not often met with, but still necessary to be studied and understood. It is for this reason we have brought before your notice the symptoms of exhaustion, and those which precede it; the same desire to direct your attention to the study of individual cases, which may be exceptions to the general principle we would wish to govern you, leads me to bring before you the varieties not only in the formation, but in the resistance of the pelvis, so that you may know where an operation might be undertaken, and where it cannot be attempted. If we have placed this subject before you with sufficient clearness, we shall conclude by directing your attention to that opposition in the practice of experienced authorities which has rendered its discussion so necessary.

<i>Names.</i>	<i>Total Cases.</i>	<i>Forceps.</i>	<i>Proportion, 1 in</i>	<i>Place.</i>
Ramsbotham	35,745	49	729	London
Clarke	10,387	14	742 nearly	Dublin
Collins	16,414	24	684 nearly	Dublin
Boivin	42,600	173	246	Paris
Lachapelle				
Boer	26,965	100	269½	Vienna
Bilian	9,392	120	78	
Cains	2,549	184	14	Dresden
Siebold	2,693	300	7	Berlin

Ramsbotham, one forceps in 700; Siebold, one in seven cases.

ART. 94.—*On the Exhibition of Ergot of Rye in lingering Labor, and the Conditions for its safe employment.* By S. HALL DAVIS, M.D., Lecturer on Midwifery, and Physician to the Maternity Charity.

(*Lancet*, Oct. 11, 1845.)

[We have given in our First Volume, p. 185, the opinion of M. Parola, as to the conditions under which the exhibition of the ergot is salutary or pernicious; to this opinion we are now able to add the views of Dr. Davis, which, as will be seen, have for the most part a similar tendency. He considers that the following conditions should be present in order to render the exhibition of the medicine a safe proceeding:]

1. The soft parts should be lax, and free from heat.
2. With rare exceptions, the orifice of the uterus should be nearly fully dilated, and always dilatable.
3. The pelvic space should present the average dimensions.
4. In head presentations only; in breech and footling cases it is objectionable, on account of the very gradual descent of the presenting parts required for the subsequent passage of the head without risk to the cord. In transverse presentations it is obviously improper.
5. The head should be in an average good position, and not impacted.
6. The inertia of the womb should not have its source in plethora.
7. The absence of any source of irritation in any other organ capable of disturbing the parturient function by reflex action should first be ascertained, as of fecal accumulation, urine in the bladder, or crude ingesta, which are to be met by their obvious indications of treatment.
8. The uterine inertia should be ascertained not to depend upon disturbance of the nervous functions, from loss of rest, or from depressing emotions.
9. There should not be present any cause of distension of the womb, beyond its power of acting to advantage, as by excessive quantity of liquor amnii or twins.
10. It would not be indicated when the inertia arises from constitutional weakness.
11. It is rarely advisable in primiparæ; much time and slower parturient action being required in these cases.

In short, this remedy being indicated on account of inertia of the womb, arising from the effect of previous distensions, there should be for its safe exhibition, a natural presentation, a wide pelvis, soft parts relaxed, nothing wanting, in a word, but efficient action of the uterus to finish the labor.

ART. 95.—*On Insuperable Rigidity of the Os Uteri.* By JOHN C. LEVER, M.D.

(*Guy's Hospital Reports*, Oct., 1845.)

The present communication contains two cases in which labor was impeded by a rigid condition of the os uteri. The first was that of a female æt. 23, who had been in labor two days, when she came under the author's observation. She had been bled, and had taken nauseating doses of tartar emetic without benefit, and the os and cervix uteri had been rubbed with the extract of belladonna, with an equal want of success.

At length, after a violent pain, the os and a very considerable portion of the cervix was expelled, in a condition approaching to gangrene. The fœtus was subsequently extracted by perforation. The after history of the unfortunate patient was that of severe constitutional disturbance, apparently depending upon purulent infection. The joints of the shoulder and elbow became suddenly painful and swollen, without redness, the pulse 136. She improved for a time, but had a relapse of the articular affection, and sank with typhoid symptoms. The second case was saved by incision of the indurated parts. The author proceeds to remark that there are many cases on record similar to the one first related, in which the os uteri has been torn off during the excessive action of the uterus, and mentions an instance which is reported in the 11th vol. of the Transactions of the Medico-Chirurgical Society of London, as well as three others, which are published in the 16th vol. of the Dublin Journal. The causes of the laceration are considered to be two-fold, first, the extreme rigidity of the os uteri, and, secondly, the pressure of the fetal head upon the cervix, which, by impeding the circulation, induces a tendency to œdema and gangrene.

The treatment recommended by the author is that which was performed in the second instance, namely, division of the contracted os uteri. The directions for the operation are as follows: "The patient should be placed on her left side, in the usual obstetrical position, and brought to the edge of the bed; the fore-finger of the left hand should then, in the absence of pain, be passed to the part of the os uteri which is intended to be incised, and, if possible, its point should be slipped within; then directing a probe-pointed bistoury, or hernia knife, along the finger, we should wait for the occurrence of a pain, when the incision may be made by pressing the cutting edge of the instrument against the indurated margin of the os. The immediate effects of the incision will be the discharge of a small quantity of thin watery blood, especially if much œdema of the cervix be present." Dr. Lever prefers the sides of the os uteri for the site of the incision, because there is less danger of wounding either the bladder or rectum than if the contrary direction were given to it.

The author condemns, in strong terms, any attempt to enlarge the constricted os by "artificial dilatation," as a proceeding which is very likely to induce inflammation, and even gangrene. He also warns us, on the one hand, against operating by incision before other more simple means for inducing relaxation have been tried, and, on the other, against waiting until the powers of life become exhausted, and the parts injured by long-continued pressure.

ART. 96.—*On the Treatment of Puerperal Convulsions.* By W. TYLER SMITH, M.B., London, Lecturer on Midwifery, &c., at the Charlotte street School of Medicine.

(*Lancet*, June 21, 1845.)

[Dr. Smith's views upon the pathology of puerperal convulsions have already been laid before the reader (vide Half-yearly Abstract, vol. i., p. 181): we shall, therefore, on the present occasion endeavor to give a condensed account of the treatment which is likewise, as will be seen, founded upon principles derived from the study of the physiology of the excito-motory system of nerves. Dr. Smith observes, that in order to arrive at something like a systematic treatment of diseases of the nervous system, each part of that system must be dissected therapeutically, as well as physiologically, from the others, for medicines have a very different effect upon each. An agent, for example, such as the ergot of rye, which increases the energy of the spinal system, as is exhibited in the augmented contraction of the uterus, has a contrary effect upon the ganglionic division, as is shown by its depressing effect upon the action of the heart; strychnia again operates powerfully upon the spinal system, leaving the cerebral intact; while conium, on the other hand, in poisonous doses, affects both the spinal marrow and the brain, producing at once both delirium and convulsions. As the spinal system is that which is chiefly involved in puerperal convulsions, all remedies must be studied in special reference to spinal physiology and pathology. These remedies are divided, by Dr. Smith into those which act upon the cerebral organ, the spinal marrow, and those which affect the extremities of the incident spinal nerves; the former class only are considered in his present communication.]

"*Bloodletting.* The action of bloodletting on the spinal marrow is greatly modified by the condition of the circulation. In fulness of the vascular system, it is the most

powerful sedative of spinal action that we possess. Hence venesection is the grand remedy in the simpler forms of convulsion, where the disease depends on stimulation of the spinal marrow by excess of blood, or upon the mechanical pressure exerted upon that organ, together with the counter-pressure of the distended brain upon the medulla oblongata. In such cases bleeding alone will frequently be sufficient to subdue the disease, when the fits come on before the beginning of labor, or after delivery. Another most important intention of bloodletting is to preserve the brain from injury during the convulsion. Besides the *primary* cerebral congestion, the original cause of the convulsion by its counter-pressure upon the medulla oblongata, the brain is exposed to the risk of fatal congestion or hemorrhage as a secondary effect, depending upon the compressing action of the convulsive fits upon the vascular system in general. As in the case of epileptics, women in puerperal convulsions frequently die of apoplexy, produced by the immense pressure exerted upon the cerebral column of blood during the fits. It is in a great measure from the effects of bloodletting in warding off accident to the brain that it is so universal a practice in this disease. The due recognition of the distinct operation of bloodletting on the cerebral and spinal systems is of the utmost consequence.\* In plethoric states of the system in this disease, it is *curative* in its action on the spinal marrow, preventive in its action on the brain.

"In the absence of definite ideas regarding the effects of bloodletting in this malady, it has often been pushed to excess, or been practised where it ought to have been avoided. In those cases in which *eccentric* irritation exists as a complication of vascular excitement, repeated bleedings will fail to subdue the latter, unless the former be at the same time removed. Bleeding may in such cases diminish the impressibility of the *central* organ, rendering it less susceptible of the irritation of the *incident* nerves, but if it be persisted in without the previous removal of the irritation, it may become in the end positively injurious, by increasing instead of diminishing the excitability of the spinal marrow.

"In vascular plethora bloodletting is undoubtedly a sedative to the spinal system, but when the circulation is reduced considerably below par, loss of blood becomes an actual stimulant to that organ. Hence it is that those who have most pertinaciously followed bloodletting, have lost a greater number of patients than those who have been more cautious in this respect. The propriety and extent of venesection must be estimated, not by the violence of the disease, but by the state of the circulation in the intervals of the fits, and with especial reference to the different effects of vascular plethora and vacuity, upon the spinal centre. I should avoid these manifest repetitions, were I not thoroughly convinced that patients lightly bled in the first instance are frequently subjected to a repetition of the operation, until loss of blood itself becomes the cause of the final seizure.

"Similar remarks would apply to other parts of the common anti-phlogistic regimen. Nearly allied in its *modus operandi* to bleeding are the effects of emetic tartar, which has been found so serviceable in the treatment of puerperal convulsions by Dr. Collins."

In the convulsions occurring in delicate anæmic women, bleeding is generally inadmissible, being, in fact, itself an exciting cause of the disease under such circumstances. Still, in cases approaching to this state, cautious bleeding may be necessary to preserve the brain from injury; but here venesection requires to be promptly followed by stimulants.

*Dilatation of the glottis.* During a convulsion the glottis is either entirely or partially closed. The greatest authority on this point, Dr. Marshall Hall, questions if ever true convulsion can occur without this state of the glottis, and the cerebral and spinal congestion which it occasions. We know that an epileptic attack is sometimes prevented by the dash of cold water on the face or chest, so as to excite a sudden inspiration. Excitation of the incident nerves of inspiration in the same way, has been known to ward off the puerperal convulsion.

*The application of cold to the head* in the form of napkins, lightly wrung out of cold or iced water, or a full stream of water poured from a height, has become an approved remedy in puerperal convulsions; it therefore becomes an interesting question,—How does cold thus used act upon the nervous system? It may act as a sedative on the cerebral portion of the spinal marrow, or it may lessen the distended state of the cerebral circulation, and thus relieve the counter-pressure on the intra-cranial portions of the spinal system. Probably it acts in both of these modes. It may also tend to excite the inspiratory act, and thus open the glottis. The application of cold to the

spine, as well as to the head, may hereafter be found beneficial in puerperal convulsions. The cold, however, must be cautiously applied, otherwise it would excite, instead of allaying, the irritability of the spinal system.

*Administration of opium.* It is highly necessary to ascertain the true effects of opium on the spinal marrow. One author maintains that it diminishes the contractions of the uterus in after-pains, another that it increases their energy. Some recommend it in uterine hemorrhage, as an efficient means of exciting uterine action, while some blame its use, on the plea that it produces uterine inertia. With respect to the propriety of its employment in convulsions, there is also a great discrepancy of opinion. Though we may not yet have sufficient data to form a perfect and decisive judgment, I believe we can at the present time make a considerable advance in the right direction.

[Dr. Smith, judging from its effects upon amphibia, is inclined to the belief that opium is a direct stimulant of the spinal system, in a plethoric state of the system, and that it is sedative in anæmia, wherefore it is, according to him, hurtful at the commencement in the majority of cases, and before a free bleeding has been instituted, but after this, and in anæmic cases, it may often be used with benefit.]

*Emotion.* The regulation of the emotions is of great importance in preventing the accession of convulsions when they are threatened, and in averting their return, on the intervals of *consciousness*. Mental excitement of every kind should be soothed, and as much as possible avoided. Perfect quiet, and the absence of all signs of excitement in the attendants, are of the utmost consequence. The effects of *psychical* agents upon the spinal marrow,—an otherwise purely *physical* organ,—is one of the most striking and indubitable facts furnished by the physiology and pathology of the spinal marrow.

## SECT. II. DISEASES OF CHILDREN.

ART. 97.—*On Gangrenous Stomatitis.* By JAMES F. DUNCAN, A.M., M.B., Lecturer on the Theory and Practice of Medicine, Park street School of Medicine, &c.

(*Dublin Journal*, Sept., 1845.)

The subject which is found to be so ably treated, and of which the following remarks are an abstract, is one which has, within the last few months, been invested with more than ordinary interest, in consequence of several medico-legal investigations which have been instituted in cases of ulceration of the mouth, with the intent of affixing the charge of *mala praxis* upon the medical attendant. The similarity between the disease in question, and the sloughing which occasionally follows the profuse use of mercury, is sufficiently close to excuse the public in the error of confounding them. But it is full time that the profession should be better instructed in those distinctive marks, which, if rightly understood, will in all cases prevent misapprehension, and will enable them to rescue a brother practitioner from, in the great majority of cases of gangrene of the mouth, the unjust obloquy of having produced it by the injudicious use of mercurials. In furtherance of this object, the observations contained in the contribution of Dr. Duncan are some of the best we have met with.

This gangrenous ulceration of the cheeks and gums has lately appeared in an epidemic form in the establishment to which Dr. Duncan is attached, and, as will be seen, clearly depended upon an impaired state of the constitution, as the gangrene was not necessarily confined to the mouth, but in some cases attacked other mucous membranes, and particularly the pudendum. The ages of the patients varied from a year and a half to five years, and, in some cases, more than one member of the same family was attacked. The disease was usually preceded by a diarrhoea, a symptom which too often failed to attract attention, inasmuch as it was naturally attributed to the effects of dentition. "The children," observes Dr. Duncan, "did not at first seem to suffer from pain in the bowels, and could bear the usual amount of pressure without inconvenience. The alvine evacuations were either thin and watery, though not deficient in bile; or they were whitish and exceedingly offensive. In almost all cases, blood

was discharged, either in a fluid state or mixed with mucus. When these symptoms had continued for a few days, the mother would mention that the child had a sore mouth, and on examination it would be found that the gums were ulcerated, and the fangs of the teeth exposed." As the disease advanced, the gums became spongy, and bled upon slight pressure. In no case, however, did the teeth fall out. Death seemed to depend rather upon the high fever which accompanied the local affection, and the persistence of the diarrhoea, than on any changes effected on the condition of the mouth.

This condition of the gums presenting a certain resemblance to the effects of mercury, might easily lead to serious mistakes as to the cause of the affection. In the present case, however, the author does not doubt the constitutional origin of the disease, as many of the children had been for months in the house previous to the attack, and had taken no medicine whatever; and as he had, moreover, been in the habit of exhibiting mercury freely in various infantile diseases, but had never witnessed the disease until the commencement of last winter. "Mercury," he observes, "so far from having a tendency to produce the disease, can be exhibited safely while it exists, and exerts rather a beneficial influence in checking its advance."

[In the diagnosis of this and the mercurial affection, the author thus remarks:—

"The importance, therefore, of establishing a correct diagnosis between this disease and the common form of mercurial ulceration of the mouth is self-evident, and as all the reasoning about to be produced in support of the opinion, that mercury is in no respect to be regarded as an exciting cause of the disease, applies with equal force to cancrum oris, I shall take the liberty of referring to it at some length. It may fairly be inferred that the two affections differ only in intensity, the infant constitution in the one case yielding to the violence of the fever, before the gangrene of the cheek has developed itself. Many persons believe that although some cases of cancrum oris occur, independently of mercury, the majority of those usually met with arise from the incautious use of this medicine, and that blame is, of course, to be attached to those persons who have been the agents of its administration. Were this opinion to be sanctioned by authority, we should be obliged to abandon the use of this valuable medicine under all circumstances, for as no one can discover, before-hand, the presence of the idiosyncrasy which renders its use hazardous, the only alternative would be the total disuse of mercurial preparations on the one hand, or, on the other, the risk of occasionally producing this dangerous result. But if it can be shown that mercury has nothing at all to do with the disease, all this unpleasant apprehension will necessarily vanish.

"It is quite plain that, in order to sustain the opinion that mercury is the real cause of cancrum oris, it would be necessary to prove that it never occurs except in persons to whom that mineral has been exhibited, a proposition which is known to be decidedly erroneous. Many cases are on record, where it has been ascertained that not a particle of mercury has been used, either internally or externally."

[Although few medical men, perhaps, maintain that mercury is the sole cause of the disease, there are many who hold the intermediate opinion, that it may be so produced in certain constitutions,—the arguments with which such persons endeavor to support their opinions are principally derived from the situation of the affection, and the symptoms it produces. Dr. Duncan proceeds to examine their validity in these words:—]

"In cancrum oris, as well as in mercurial action, we have pytalism, fætor of the breath, ulceration of the gums, and loss of teeth; but these symptoms, carefully inquired into, do not present the same appearances in the two cases. In the first place, the salivation of cancrum oris is moderate in quantity, and the fætor of the breath does not present the peculiar and characteristic odor by which we are enabled to recognize the incipient effects of mercurial action. But the ulceration of the gums is, perhaps, the most satisfactory proof, because, unlike the ordinary appearance of mercurial ulceration, it is confined to a *part only* of the alveolar process. . . . Not to mention the extreme rarity of mercurial action in children, it is well known, as Marshall Hall observes, 'that the effect of calomel, when it does take place, is *uniformly* diffused over the gums, the tongue, and internal parts of the cheek.'

"The arguments therefore adduced in support of the opinion, that the development of the disease is due to the action of mercury upon an unhealthy constitution, are without force. It remains to mention those arguments which have an opposite tendency.

"In the first place the disease in question is almost exclusively confined to children,



who are, as is well known, scarcely susceptible of the ordinary effects of mercurial action; very few instances of pytalism having occurred under the age of sixteen years. Cancrum oris, also, is a rare disease, while the use of mercurial medicines in infantile diseases is exceedingly common.

"Again, it is well known that the existence of fever is quite sufficient to prevent the usual physiological effects of mercury developing themselves, and that the manifestation of pytalism indicates a remission in the violence of the constitutional disturbance. Now it has been observed by the best writers on this disease (cancrum oris) that it is always connected with this very state of the system, in which it is so difficult to salivate the patient.

"But perhaps the strongest argument in favor of this view is that which is derived from the effects of remedies. I have already stated, that if mercury be the exciting cause of the disease, it would be worse than useless to administer any of its preparations in the subsequent treatment. It is a remarkable fact, however, that many cases have been thus treated, not only without injury, but with marked benefit." Dr. Cumming, of Armagh (Dublin Hosp. Rep., vol. iv.), did not hesitate to use calomel as a purgative in these cases, and the author himself states that he has uniformly found mercurial purgatives preferable to any others in general use among children. [Other arguments in favor of the opinion that mercury is not the cause of gangrenous stomatitis, are based upon the fact that the gangrene in some cases attacks the pudendum and not the gums, in which case the mineral could not obviously be accused of the mischief. The paper is concluded by the relation of several highly instructive cases. The treatment confided in by Dr. Duncan consists in attention, in the first place, to the intestinal affection which precedes the gangrene. The cure of this is most readily accomplished by speedy and decided counter-irritation of the abdomen. The best internal medicine is acidulated decoction of bark, or infusion of calumba and nitric acid. To regulate the secretions hydr. c. creta, with Dover's powders, is recommended. Wine was freely given in all cases. But little confidence is exhibited in local applications to the gangrenous parts.]

ART. 98.—*Gangrene of the Vulva in an Infant treated by the Actual Cautery.*—The subject of this case was of the age of two years, of the lymphatic habit, but otherwise in a healthy state. At the time that it was admitted into the hospital (Des Enfants Malades) it had a gangrenous patch on the inner side of the labia majora, completely encircling the clitoris. No apparent cause could be discovered. The child had been tolerably well nursed, and did not appear in the least in a condition likely to give rise to mortification. When seen the next day the gangrene had made considerable progress, wherefore M. Guersent determined to lose no time in the endeavor to check it. As an external application, he touched the diseased part with an iron heated to whiteness; internally he exhibited wine and quinine. In spite of this treatment the sloughing gained ground, and a second and deeper cauterization was had recourse to. From this moment the disease was arrested; the eschar speedily detached itself, and disclosed a healthy granulating surface. The child continued the quinine for some time longer, and was discharged cured.

This form of disease is not uncommon in the crowded hospital for sick children in Paris, and, like the cancrum oris, appears to depend upon a general vitiation of the fluids, induced, mainly, by deficient ventilation; the action of the cautery was decided in this case.

*Gazette des Hôpitaux*, No. 66.

ART. 99.—*On Convulsions in Children.* By MM. RILLIET and BARTHEZ.

(*Medico-Chirurgical Review*, October, 1845.)

[Infantile convulsions are divided by the authors of the "*Traité Clinique et Pratique des Maladies des Enfants*," into two classes. 1st. Convulsions without lesion of the brain, and sympathetic of disturbance in other organs; and 2d. Convulsions symptomatic of lesions of cerebro-spinal origin. It is a matter of considerable moment to be able to pronounce to which of these two categories a given case belongs, as the prognosis in the two is widely different. MM. Rilliet and Barthez give the following rules for this purpose:]

"You are called to a child suddenly seized with convulsions. He is from one to six years of age, strong, robust, and fresh-colored; the attack has followed a sudden fright, a fall, a blow, or an indigestion, *i. e.*, some appreciable occasional cause. What is the affection he is suffering from? You are in doubt whether the convulsion is primary, sympathetic, or symptomatic, or whether it is not the prelude to epilepsy. If the child was quite well; if the determining cause is well made out; if the constitution is good, and the fit not violent, you may suspect that it is a sympathetic convulsion, or an attack of epilepsy. You examine with care the various organs, and after you have assured yourself that there exists no symptom of pneumonia, pleurisy, &c., you hesitate only between deciding it to be a convulsive or an epileptic attack, and are obliged to trust to the future for a solution of this doubt, acting, in the meantime, according to the urgency of the case. Suppose, at the time of the attack, the child was laboring under severe disease, as pneumonia, pertussis, &c. In this case the convulsion is evidently sympathetic of the visceral lesion; is it at the same time symptomatic of brain disease? In the great majority of cases you may be certain that it is not so. The brain suffers sympathetically, and not from any disease of its own substance, which need cause any alarm. But this is a very different thing from saying that the convulsion is not dangerous.

"But it is quite different when the convulsions attack a child the subject of chronic disease. If you are informed that for weeks and months the child has been losing flesh and color, has had a capricious appetite, irregular digestion, and vomitings; if you learn that its parents were phthisical, or that it has been exposed to the causes of tubercular disease; then, although the convulsion may even be the result of an appreciable occasional cause, you must fear that the attack is but symptomatic of some grave cerebral affection, and deliver an unfavorable prognosis accordingly.

"If the child is more than ten years old, the diagnosis is much easier, for it is very rare, at this age, for convulsions to be sympathetic or essential; and they are, for the most part, symptomatic of a disease of the brain, or constitute a first attack of epilepsy."

ART. 100.—*Treatment of indurated Tonsil Glands by Compression.* Professor Huss, of Stockholm, has employed the following method with success. He introduces the index-finger into the mouth, and compresses the indurated gland with its extremity for several minutes at a time. This is repeated three or four times a day. After some days of this treatment, the professor states that the gland becomes softer, absorption commences, and the surface of the tonsil is evidently relaxed and wrinkled. When this condition has been attained, stimulating gargles may be employed. The author remarks that this treatment should always be tried in those cases in which excision is contemplated.

*Gazette des Hôpitaux, 94.*

ART. 101.—*External Use of Digitalis in Croup.* M. Rudemacher, of Berlin, affirms, that in cases of croup (*laryngismus stridulus*?), when he has been unable to exhibit medicine by the mouth, he has derived benefit from the following prescription:—

Extract of digitalis 3 ij.

Lard . . . 3 ij. To make an ointment.

The throat is entirely covered with lint smeared with this preparation, and frequently renewed. The suffocative paroxysms are stated to have been quickly relieved.

*Ibid, 93.*



# REPORTS

ON THE

PROGRESS OF THE MEDICAL SCIENCES.

*July—December, 1845.*

THE intention of the following Reports is to pass in review the principal additions to each department of Medical Science, which have been placed on record during the preceding six months. It is not contemplated that they should be confined exclusively to the notice of what is new; any fact or doctrine which may be considered practically useful, will, although not strictly novel, be regarded as worthy of commemoration. It must be obvious to all who are aware of the immense mass of information which is almost daily put forth by the medical press of this and other countries, that the notice of every subject would be an impossibility. It therefore devolves upon the writers of each Report, to select only such articles for retrospection as may possess superior recommendations, either of an intrinsic character, or in relation to the main end and aim of all medical knowledge—the alleviation of suffering and disease.

# I.

## REPORT ON THE PROGRESS OF PRACTICAL MEDICINE, PATHOLOGY, AND THERAPEUTICS.

BY THE EDITOR.

[The figures in brackets refer to corresponding Articles in the Abstract.]

### PART I. GENERAL PATHOLOGY.

#### § I.—*Diseases of the Blood.*

1. *Spontaneous coagulation of the blood in the veins in the cachexia, and in various chronic diseases* :—The attention of pathologists having once been directed to the existence of fibrinous clots in the veins, as it occurs in phlegmasia dolens, it was not long before it was perceived that an affection of an analogous nature occasionally appears, not only in non-puerperal women, but under certain circumstances in the other sex also. This *non-puerperal* coagulation of the venous blood forms the subject of a very comprehensive essay by M. Bouchut,\* the main points of which we shall endeavor to lay before our readers.

In detailing the history of the affection, the author does ample justice to the writings of those of his own countrymen who have preceded him, but among British writers, alludes only to Hunter, Abernethy, and Travers. To those he might have added the names of Dr. Robert Lee, who distinctly acknowledges the existence of a disease analogous to phlegmasia dolens, unconnected with the puerperal state, and of Dr. Bright (Reports of Med. Cases, vol. ii., p. 63), who, in addition to this, traces the connection between the disease and a cachectic state of the system, which is indeed the direct object of the author's present communication. The matter contained in the memoir of M. Bouchut is thus distributed. The first chapter contains a record of the cases upon which his opinions are based; the second a description of the anatomical characters of the disease; in the third, are described the symptoms which announce the coagulation of the blood; the fourth, fifth, sixth, seventh, and eighth, are occupied with the progress and termination, the diagnosis, prognosis, causes, and treatment, of the disease respectively.

The cases alluded to were as follows :—Three phthisical women in the last stage of marasmus; a woman laboring under calculous nephritis, with destruction of the tubular structure of the kidney; a man affected with encephaloid disease of the liver; a female greatly reduced by typhoid fever; a boy ill with a severe burn; and some others, each of whom, from various causes, was suffering under great prostration of the vital powers.

The most common seat of the coagulation is in the veins of the lower extremities; but it sometimes, though more rarely, occurs in those of the arms and neck. It is found also occasionally in the sinuses of the brain, as observed by Abercrombie; and in the pulmonary arteries, and in the veins of the liver, as described by MM. Biquilaud and Baron. The inferior extremities, however, are so much the most frequent seat of the disease, that it occurred in that situation in 44 cases out of 51 observed by M. Bouchut. The author mentions, as a remarkable fact, that the veins implicated are usually those the most distant from the organ chiefly affected by the disease, which gives rise to the cachectic state of the system; he does not deny, however, that in

\* Gazette Médicale, Nos. 16, 17. 1845.

tubercular phthisis and in cancer, the smaller veins in the immediate neighborhood of the diseased structure may become obstructed by coagula. The extent of the coagulum varies in different cases, but is, as a general rule, regulated by the locality at which the collateral veins originate. The coagulum first appears in the form of a dark clot, which takes the shape of the vessel, but does not adhere to its inner coat. When adhesion does take place, it is supposed by the author to be due to a secondary phlebitis, set up by the irritation of this clot, but in no case does he believe that the coagulation originates in inflammation in the first instance. After an interval of fifteen or twenty days, the coagula lose their color, and become tough and consistent, and in some cases even of cartilaginous or calcareous hardness.

The symptoms which announce the coagulation are strictly local, and unconnected with the cachexia or chronic disease, in the course of which the phenomenon arises. The patient experiences pain in the thigh or angle of the affected limb, which pain is in the course of a few days followed by œdema. The skin is of a dull white color, as in puerperal phlegmasia dolens.

The diagnosis is founded upon the occurrence of sudden pain in the limb, in the latter stages of a chronic malady, and the rapid supervention of œdema; in such a case M. Bouchut considers that obliteration of the vein may be confidently pronounced to exist.

The prognosis is not unfavorable as far as the local affection is concerned; the danger is entirely dependent upon the anterior condition of the patient. It must inevitably be considered a serious complication when it supervenes in the latter stages of phthisis or cancerous disease, and, under such circumstances, indicates the near approach of a fatal termination. In more favorable cases, either the vein itself becomes pervious by the absorption of the coagula, or, as is more frequently the case, the circulation is maintained by the enlargement of the collateral veins.

In the treatment of this affection, M. Bouchut discounts depletory measures of all kinds, but trusts entirely to narcotic fomentations, and the internal exhibition of opium.

It has been mentioned in the course of the above imperfect sketch of M. Bouchut's memoir, that Bouillaud and Baron had observed the spontaneous coagulation of the blood in the pulmonary arteries; we may further state that Mr. Paget\* has paid considerable attention to the same lesion, but without laying any stress upon its alliance to cachectic states of the constitution. The conditions under which the latter gentleman has noticed it, are principally four:—first, in pulmonary apoplexy; secondly, in the advanced stage of pneumonia; thirdly, when the matter of medullary cancer passes into the blood, and becomes arrested in the lungs; and fourthly, in cases of extensive pulmonary œdema.

2. *Suppuration of the blood.*—*Purulent infection*:—The presence of pus in the blood, gives rise to a train of symptoms of so fatal a nature, and at the same time so surrounded by obscurity, that any communication tending to advance our knowledge upon the subject cannot fail to be of considerable interest. Of this character is an essay by Dr. H. Bennet, of Edinburgh, which appears in the "Edin. Med. and Surg. Journal," of October, 1845. The purulent contamination of the blood here referred to, is noticed in connexion with chronic disease of the spleen, two cases of which are related. The first case is that of a man, æt. 30, who was admitted into the Royal Infirmary with enlarged spleen. There was little disturbance of the system in the first instance, but, about the fifth day, febrile action ensued, with headache and diarrhoea, and the man died suddenly. After death, in addition to the enlarged spleen, the blood was found to be much altered in character, being coagulated in the principal venous trunks; and exhibiting a mixture of a whitish substance, apparently either lymph or pus. The lining membrane of the veins did not exhibit any perceptible alteration, as would have been the case, had the coagulation depended upon phlebitis; neither were there any purulent depôts in various parts of the body, as is usually seen when the pus has gained admission into the circulation by absorption; for these reasons Dr. Bennet, who has reviewed the case in connexion with another occurring under similar circumstances, regards it as an instance of true suppuration of the blood. The *a priori* view of the case, as is indeed allowed by Dr. Bennet, tends rather to the belief that the whitish substance described, is the softened fibrine described by Gulliver,

\* Medico-Chirur. Transactions, vol. xxvii., and Meeting of the Medico-Chirurgical Society, June 24, 1845.

or the same material existing in connexion with coagulation, of the nature above described by Bouchut; a view which would be strengthened by the fact that, although the precise office of the spleen in sanguification is not decided, disease of that organ is known to be almost invariably followed by a peculiar cachectic state of the system. The evidence, however, adduced by Dr. Bennet in proof that the globules were in reality those of pus, is sufficiently strong, to induce us to coincide with him in the present instance. The point mainly depends upon the question, whether pus can be formed in the blood independently either of inflammation, or of absorption from purulent depôts. Dr. Bennet says that it can, for as pus-globules arise in a blastema formed in the liquor sanguinis, he sees no reason why they should not arise in the vessel as well as out of it, if any circumstance should arise, which determines the separation of the serum from the more solid constituents of the blood.

3. In connexion with the formation of the disseminated abscesses seen in the lungs, liver, and other organs, as a sequel to purulent infection, we find some valuable remarks in a recent and most talented work on the Diseases of the Liver, by Dr. George Budd.\* It is a commonly received opinion that the pus found in these organs is not the product of local inflammation, but that it is all brought with the blood from the spot at which the primary suppurative took place (as in the veins of the diploë for instance), and is merely deposited in the spots in which it is found. Dr. Budd objects to this opinion, for the reason which appears sufficiently forcible, that pus-globules being twice as large as the blood-globules, they could not escape bodily from the blood-vessels without the blood escaping as well. He alleges also in support of his opinion, the researches of Dance and Cruvelhier, which show that although fully formed abscesses are generally found in the lungs in the cases in question, yet, that in some instances in which death occurred earlier, smaller hepatized spots, or in other words an earlier stage of inflammation, are seen to occupy the site of the small collection of pus. From these and similar observations, Dr. Budd considers it "established that the abscesses which form in the liver and other organs after surgical operations and injuries, are owing to suppurative inflammation of a vein, and consequent contamination of the blood by pus. The globules of pus mingled with blood, are conveyed to the capillary vessels of the lungs, and by becoming arrested there, excite circumscribed inflammation and abscess."

4. *Purpura*.—The profession appears to be much divided in opinion, if we may judge by a late discussion upon the subject, at the London Medical Society,† as to the pathology of purpura. The majority having regard to the analysis of the blood in this disease by Becquerel and Rodier (vide Half-yearly Abstract, Vol. I., p. 320), will doubtless consider that it mainly depends upon a deficiency of fibrin.‡ Some are, however, disposed to view it as occasionally a local disease. Dr. Rees believes that, like Bright's disease, purpura consists of two stages, the one exhibiting a superabundance of fibrin, the other a deficiency. In the treatment of the profuse hemorrhages which sometimes occur during the progress of the disease, turpentine is highly spoken of by Mr. Headland§ and Dr. Neligan|| and ergot of rye by Dr. Ross,¶ of Boulogne.

5. *Effect of Hydropathy upon the Blood*.—A German physician, M. Albert,\*\* who has had ample opportunities of witnessing the operation of the water-cure, has remarked that persons who have pursued the system uninterruptedly for two or three months, are apt to acquire a habit of body not dissimilar to that of scurvy. The pulse becomes accelerated, soft and feeble. The patient is subject to palpitations and a continual feeling of lassitude, and eventually suffers from spongy gums and aphthous ulcerations of the interior of the lips and cheeks. From these symptoms M. Albert concludes that the immoderate use of water has a tendency to impoverish the blood.

6. *Anæmia*. M. Beau endeavors to point out a distinction between anæmia, more properly so called, arising from an absolute deficiency in the quantity of blood, and that condition of the circulating fluid which consists not so much in a diminution in absolute quantity, as in a relative increase in its watery constituents. In the first, which follows immediately upon direct loss of blood, there is pallor and feebleness, but the

\* On Diseases of the Liver. London, 8vo., p. 53.

† Lancet, Oct. 25.

‡ See a Paper by Mr. Close of Manchester, Med. Times, Oct. 25, 1845.

§ Lancet, Oct. 25, 1845.

|| Lancet, Oct. 25, 1845.

¶ Dublin Journal, Nov., 1845.

\*\* Medicinische Correspond. Blatt.



pulse is small, and no arterial *bruit* is heard. The latter, to which he gives the name of *polyhæmie sereuse*, is generally consequent upon the other, and depends upon an abundant ingestion of liquids, called for by the urgent thirst. This form of anemia does not in general declare itself until the fourth day after the loss of blood; and may continue for an unlimited time. In this, as in the former case, there is pallor and debility, but the pulse is even more developed than before the hemorrhage; and an arterial *bruit* becomes very distinct.\*

A case in which death was produced by anemia, is related by Mr. Pearce;† the fatal event being attributed to coagulation of the blood in the sinuses of the brain. The patient was suddenly seized with acute pain in the head, followed by convulsions and coma. It is to be regretted, that this case loses much of its value in a pathological point of view, from the want of a post-mortem examination; it is, however, worthy of attention, inasmuch as it may put us upon our guard with respect to the prognosis of these usually simple cases. That the supposition of Mr. Pearce, as to the immediate cause of death, is supported by experience, is shown by Dr. C. J. B. Williams, who records three cases in which coagulation in the cerebral sinuses was found after death, under similar circumstances. It is also countenanced by the researches of M. Bouchut, to which we have above alluded.

7. *Effect of disease upon animal temperature*:—Although the records of medical science include many isolated groups of experiments upon this interesting subject, a well-digested and at the same time extensive series of investigations is still a desideratum.‡ In as far as the reunion of partial observations may ultimately tend to the acquisition of definite ideas on the point in question, we are indebted to M. Roger, who has carefully studied the effects of disease upon the development of animal heat in children. This pathologist has found, as one result of his observations, that although in adults the temperature of the body in disease fluctuates through a range of only 7° cent., in children it varies as much as 19°. The highest temperature observed by him was 42° cent., and occurred in typhus, pneumonia, and meningitis. Among the practical deductions which he has proposed is the one that typhus may be diagnosed to a certainty if the temperature of the body reaches 40°, the pulse at the same time not surpassing 100. In all other diseases in which the same degree of heat exists, he declares that the pulse is considerably quicker. It is more common for the temperature to exceed the physiological level, according to the author's remarks, than to sink below it. The latter is, however, seen to occur in paralysis, gangrene, cholera, and in the cold stage of intermittent fever. We may remark that the latter observation is directly opposed to the opinion of Andral, who found the temperature to rise from 2° to 4° in the cold stage. The disease which exhibits the greatest fall of temperature in children, is the oedema of the cellular tissue. This disease is, according to the author, to be apprehended when the thermometer points to 36° cent., it may be considered as established if it marks as low as 30°. We give these results of M. Roger as we find them, they are obviously too meager to allow of implicit confidence.§

## § II. Zymotic Diseases.

8. *Fever.—Typhus and typhoid*:—The French Academy has for a considerable period since the date of our last Report been occupied by discussions respecting one or two points of great importance in the pathological history of fever. The questions of essentiality or non-essentiality, of its dependence or non-dependence upon inflammation of the Peyerian glands, have at length ceased to be agitated, and in their place we have that of the identity or non-identity of typhoid with typhus fever, and of its contagious nature. The discussion on these points originated in the presentation of a memoir by M. Gaultier de Claubry,|| in which both propositions were distinctly affirmed. M. Rochoux, who opened the debate which ensued, denied the identity of the two diseases on these several grounds. 1. That typhus was contagious, typhoid fever not so. 2. That the former attacks at all ages, the latter rarely occurs before 15, or after 40. 3. That the peculiar delirium and eruptions of typhus are not ob-

\* Archives Générales de Médecine, Août, 1845.

† Lancet, June 7, 1845.

‡ Since the above was written, Dr. Hake has published two papers upon the subject in the Med. Gazette (Nov. 14), but has not yet attempted any analysis of his facts.

§ Archives Générales de Méd., and Lancet, Aug. 9, 1845.

|| Revue Médicale, and Archives Gén., Juillet, 1845

served in typhoid fever; and lastly, that the duration of the two affections is different, being in the one case from ten to fifteen days, in the other, from twenty to thirty.

This confessedly intricate question is extremely well reviewed by a writer in the *Dublin Journal*,\* who discusses the objections of M. Rochoux seriatim, after the following manner:—

The first point of difference which M. Rochoux seeks to establish, is the circumstance of contagion. This argument the author of the article alluded to shows to be of little value, as the typhus of Ireland is not always contagious, any more than the typhoid fever of Paris. As a proof of this, he states that out of 9588 cases of fever admitted into the Belfast Hospital, no trace of contagion could be discovered in 2342.

A second ground of distinction much insisted upon, is the different ages at which the two diseases occur. This is opposed by the author for two reasons: 1st. That much error is committed in estimating age, from the omission to notice the fact, that as it is the custom for the youth of both sexes to congregate in Paris from all parts of the French dominions, the majority of patients of all classes must necessarily be near the age of puberty. 2d. That the reason why typhoid fever is said never to occur in children, is that the French pathologist is apt to deny the existence of the disease, unless he has an opportunity of seeing the diseased bowels, which, as children comparatively speaking seldom die of fever, he has but little opportunity of doing. But, as the author observes, the objection is completely reversed by the fact, that cases are on record in which the rose-colored spots of fever were visible even at birth. On the other hand he remarks, that the true typhus of Ireland is equally rare among children with the typhoid fever of France, and equally uncommon among aged persons, since of 11209 cases admitted into the Belfast Hospital, 301 only were under 6 years of age, and 171 only were over 60. The other objections of M. Rochoux meet with the same opposition at the hands of the author, who therefore concludes that there are no just grounds for regarding the two diseases as distinct affections, but that the most which can be said is that they are varieties of the same type of fever.

The contagiousness of typhoid fever asserted by M. Gaultier de Claubry is likewise maintained by M. Jacques,† and by M. Patry,‡ the former of whom affirms that the disease never quits a house until every person has been attacked who is predisposed; and that it is extremely rare to see the inhabitants of the same lodging, down with the fever at separate times, with an interval of more than a fortnight, the usual limit of the period of incubation.

In the treatment of fever we might gain but little information from the writings of the last few months. The plan pursued by M. Jacques, is the combination of emetics and purgatives, with the constant application of cold to the head and abdomen. The same treatment is likewise recommended by Professor Huss,§ with the addition of frequent ablution with chlorine water, and the exhibition of opium, musk, and phosphoric acid. The latter medicine was found particularly serviceable in the adynamic forms of the disease, and it is somewhat remarkable that the professor takes the same symptom as an indication for the employment of this medicine, which is mentioned by Dr. Graves as indicating the necessity for wine, namely, a feebleness of the first sound of the heart, and its approach in character to the introduction of the second sound.

9. *Typhus material*:—It is a favorite theory with the German physicians, that during the progress of typhus fever, a certain morbid material, said by Rokitansky to resemble medullary sarcoma, is poured out from the blood into the texture of various organs. Vogel|| among others, has paid much attention to the point, and has published observations which have recently been translated by our talented reporter on anatomy and physiology, Mr. Kirkes. It would seem that the parts most liable to become the seat of the above-mentioned material are the mucous membranes, but it may also appear in the substance of the denser organs. The action which precedes the deposition of the typhus material, is said to be inflammatory, and to affect especially the solitary and aggregate glands of the small intestines. The most important transformation undergone by the typhus material after its deposition is its conversion into a brownish slough, which upon separation leaves the typhus ulcer. The material examined by the microscope is seen, according to Vogel, to consist of an amorphous granular pro-

\* September, 1845.

† *Gazette Médicale*, No. 21, 1845.

‡ *Gazette Médicale*, No. 21.

§ *Erläuterungstafeln zur Pathologischen Histologie*, and *Med. Gazette*, Oct. 31.

† Reported in *Archives Gén. de Méd.*, Août, 1845.

duct of a brownish-white color, and containing cells of 1-800th of a line diameter; some nucleated.

The subject of the typhus material has also been taken up by Engel.\* This author has observed it under two forms, a fluid and a solid, usually combined; the fluid matter is viscid and opaque, and when allowed to rest, throws down an abundant sediment of epithelial cells and phosphate crystals; the solid matter, as observed by Vogel and Rokitsansky, is chiefly found in the intestinal follicles. The processes of ulceration and reparation are faithfully described by Engel, as well as certain anomalies to which the diseased product is occasionally subjected; for a detailed description of these, we must refer the reader to the original.

10. *Yellow fever*.—The pathology of this severe malady, which has lately been invested with unusual interest from its appearance on our own shores, is ably treated of in a communication from the pen of Dr. Nott† of Mobile, giving the particulars of several epidemics witnessed by him in that locality. In seeking to determine the nosological status of this fatal disease, he comes to a conclusion, of the truth of which little doubt can be entertained, namely, that it is a special fever, and like other fevers, subject to considerable variations in its leading characters, according to the local or individual circumstances under which it arises. The author eulogizes, as every candid reader must do, the philosophical researches of Louis upon the disease as it occurred in Gibraltar, but finds it necessary to differ from him in some particulars. Louis, as may be remembered, considers the leading characteristic of yellow fever to be a "peculiarly anemic and friable condition of the liver, giving to it the color of butter." This appearance was not found by Dr. Nott as a general rule, being present in only one-third of his cases. It may be observed, however, that Dr. Imray,‡ to whom we are also indebted for an essay on the fever in question, sides with Louis.

Dr. Nott has examined with great minuteness the condition of the blood and secretions in yellow fever. As in other fevers, the blood was found to be dark and grumous, and exhibited but little disposition to coagulate. The peculiar and fatal symptom, the black vomit, is decided by actual experiment to be blood, modified by admixture with the acids of the stomach.

The causes of yellow fever are discussed both by Dr. Nott and Dr. Imray; the former, however, goes no further than to admit, what cannot in the present day be doubtful, that it is a poison which by some means or other gains admission to the blood, and then propagates itself by zymotic action. He does not pretend to decide whether the poison is of animal or vegetable origin. Dr. Imray examines the question upon a more extended basis, and discusses the opinion held by some, that the exciting cause is of malarial origin, differing only from that which originates the intermittents and remittents of tropical climates, in the degree and concentration of its effects. He considers this opinion to be a fallacy, since there are many localities, as the islands of Dominica and S. Lucia for instance, in which circumstances necessary to the development of malaria exist in a high degree, without the production of yellow fever, while, on the other hand, in the neighboring island of Barbadoes, to which intermittent fever is comparatively a stranger, yellow fever forms a fearfully large item in the bills of mortality. Another reason which he considers to militate against the identity in origin of yellow with intermittent fever, is the fact that the former does not appear to be influenced either by season or temperature, being equally rife in wet seasons and dry; when the temperature was high, and when it was low. In this he is quite borne out by the observations of Ruzs.§

11. *Intermittent fever*.—M. Piorry has lately adopted the strange opinion that ague is not, as it is generally held to be, the cause of the enlarged condition of the spleen with which it is associated, but, on the contrary, that the hypertrophy of this organ is the exciting cause of the febrile paroxysm. True to his belief, he has lately recorded a case which proved rebellious to quinine, and which was at length cured by the application of a bandage preventing the descent of the enlarged spleen. The paroxysms are supposed by him to depend upon traction exercised upon the splenic plexus of

\* Schmidt's Jahrbucher, No. 7, 1845, and Med. Gazette, Oct. 31.

† American Journal of Medical Sciences, April, 1845.

‡ Edin. Medical and Surgical Journal, Oct., 1845.

§ Gazette Médicale, No. 37, et seq.

nerves.\* At a late meeting of the Académie de Médecine,† M. Savielle denied the influence of miasmata in the production of intermittent fever, and attributes the disease to the sole agency of cold and damp; the opinion, as might be expected, met with decided opposition from the majority of the members present. In the treatment of ague, M. Trousseau‡ advises the exhibition of quinine in a single large dose, rather than in repeated small doses; he states that he has known an obstinate case which had resisted an ounce of quinine given in the ordinary way, to yield at once to a single dose of fifteen grains. The same opinion as to the efficacy of large doses, it may be remarked, is held by Dr. Elliotson (vide Watson's Lectures, vol. i., p. 747), and has recently been acknowledged by Dr. Chambers,§ of Colchester. The *Achillea millefolium* has also recently been employed with success as a substitute for quinine, by an Italian physician.

12. *Measles*.:—The only communication of interest upon this subject, is one by Dr. Battersby,|| containing the description of an unusually severe epidemic which occurred in the South Dublin Union Workhouse, at the close of the last year. This epidemic was remarkable for the frequent supervention of various untoward complications, the principal of which was a diphtheritic inflammation of the fauces, mouth, and larynx, accompanied by pneumonia, which latter affection was, in the majority of fatal cases, the immediate cause of death. The diphtheritic affection, according to the author's experience, was not in itself a formidable symptom. In another class of cases, a severe diarrhoea, with bloody stools, frequently appeared about the decline of the eruption. It was readily controlled if unconnected with pulmonary complication.

In the treatment of the majority of the cases which occurred during this epidemic, general bloodletting is described as being inadmissible, whatever might be the local complication, but in some instances leeches were employed with advantage, as were also warm baths, and counter-irritation with the local application of nitrate of silver in solution to the fauces.

13. *Syphilis*.:—M. Cullerier¶ has lately performed a series of experiments in order to determine the inoculability of the lower animals, with the syphilitic poison. The result of repeated trials upon monkeys, guinea-pigs, &c., appears to be that the disease in question is confined to the human race, as in no instance was the experimenter enabled to communicate the disease.

14. *Vaccination*.:—Several communications on various points connected with vaccination have recently been put forth. One of these is a work by Sir Matthew Tierney, entitled "Observations on Variola Vaccina or Cowpock;" another to which we may refer, is an excellent Report on "Smallpox in Calcutta," and "Vaccination in Bengal," by Dr. Stewart.\*\* M. Blouquier†† also has investigated the subject with respect to the age at which it is most safe to vaccinate an infant. It seems that in France the operation is considered dangerous in very tender infancy. M. Blouquier therefore writes for the purpose of convincing his countrymen that there is no risk even in the first week, but, on the contrary, that the younger the subject, the less the disturbance of the system. The most interesting information, however, coming within the period of our Report, is contained in the Report of M. Serres upon the memoirs which were presented to the French Académie des Sciences, in competition for the vaccination prize offered by that learned body. We regret that our space will not allow of an analysis of the entire article; we shall therefore be content with presenting an abstract of the principal conclusions to which the various memoirs tended. These are as follows:—

1. The preservative power of vaccination is absolute in the majority of cases; it is temporary in comparatively few, and in these it is almost absolute until puberty.

2. Smallpox rarely attacks vaccinated persons before the age of ten or twelve years.

3. Independently of its preservative virtue, vaccination introduces into the organization a principle which has the property of diminishing the virulence of the symptoms and shortening the duration of the disease.

4. Inoculation direct from the cow gives rise to symptoms of great intensity, but it is more certain than vaccination with the ordinary virus.

\* Gazette Médicale.

† Journ. de Méd., Mars, 1845.

‡ Provincial Medical Journal, Oct. 29.

§ Archives Générales de Médecine, Mai, 1845.

\*\* Reviewed in Medico-Chirurgical Review, Oct., 1845.

†† Encyclographie Médicale, Avril, 1845.

† France, Sept. 16, reported in Med. Times, Sept. 27, 1845.

|| Dub. Journ., Sept., 1845.

5. The preservative virtue of vaccine does not appear to be proportionate to the violence of the local symptoms, but it is nevertheless advisable to renew the virus after a certain period.

6. Among the means proposed for this renewal, the only one worthy of confidence consists in taking the virus from its original source, the cow.

7. Revaccination is the only method by which the properly vaccinated can be distinguished from those who are not safe.\*

8. The success of revaccination does not necessarily prove that the party would have contracted smallpox; only that such an event was probable.

9. In ordinary times persons should be revaccinated at the end of fourteen years, but the operation should not be so long deferred during the existence of an epidemic.†

### § III.—Accidental Productions.

15. *Accidental productions in general*.—M. Baron,‡ in continuing his researches upon the nature and mode of development of the various accidental formations to which the human body is liable, has arrived at a conclusion, which the growing confidence in the truth of the "cell theory" renders less remarkable, namely, that they are all identical in origin. The reasons upon which he founds this proposition are, the frequent similarity of anormal tissues; the mutual transformations which they undergo; their simultaneous appearance, analogy of structure and development; their analogy of seat; the similarity of symptoms, progress, and termination of the diseases to which they severally give rise, and lastly, their identity in chemical composition. In seeking to establish the proximate cause of the various forms of accidental tissue, M. Baron differs both with Trousseau and others, who attribute them to a low form of inflammation, and also with Cruveilhier, who considers them to arise in a phlebitis of the part in which they are seen. The opinion to which he leans, is that which has long been maintained by Andral in respect of tubercle, that they originate in a perverted action of ordinary nutrition; by which, instead of the development of a normal cell, one is formed which is disposed to go through the various phases of diseased development seen to exist in the different varieties of accidental tissue. The diseased cell is considered by the author to be in the initiatory stage identical in every species of morbid development, whether it be cancer, melanosis, tubercle, false membranes, hydatids, &c. What the principle is which impresses upon this cell the peculiar characteristics of the individual structure to which it is destined to give rise, he does not pretend to decide. The remote cause of all accidental formation is attributed to some inappreciable modification of one or more of the constituents of the blood.

16. *Cancer*.—Some observations on the microscopic anatomy of cancer, are to be found in the "Medical Gazette," of September, 1845, which are extracted from a recent work by Vogel. These are not, however, of importance, as they add little or nothing to our previous knowledge of the subject. The frequency with which cancer displays itself at different ages, and in the two sexes, is investigated in a short communication by Mr. Wilkinson King,§ being the result of post-mortem examinations made at Guy's Hospital. If any facts were wanting to show the danger of a too implicit reliance upon the "numerical method," the following conclusions might, we think, be adduced. Mr. King finds that half of the number of females dying at or about the age of 44 years, are the subjects of cancerous formations; of males dying at the same age, one-eighth are similarly affected. He also states that in both sexes cancer increases in frequency from youth to the age of 44, and then decreases.

A few interesting cases of cancer of various organs have been recorded within the period of our Report, which will be noticed under the section on special pathology.

17. *Tubercle, presence of, in different organs*.—The following is a condensed summary of a valuable essay, for the details of which we refer the reader to Art. 26.

"In 152 autopsies of adults affected with tubercles, M. Cless|| found the lungs free from tubercles six times. In 2 of these 6 cases, the peritoneum was sprinkled with tubercular granulations; in 1, the pulmonary and costal pleura of the right side were affected; in 1, the bronchial glands, mesentery, and lower part of the ileum, were the

\* It may here be remarked that the value of revaccination, except as a test of a former operation, is denied by Mr. Newham, of Farnham, in a paper lately published in the Medical Gazette, Oct. 17.

† Bulletin des Acad., Nos. 7, 8, and 9, 1845.

§ Medical Gazette, Aug. 1, 1845.

‡ Gazette Medicale, Mai, 1845.

|| Schmidt's Jahrbucher, 1845, and Lancet.

seat of the tubercular disease. In the 5th case, both the pleuræ and the peritoneum were sprinkled over with tubercles of various sizes, from that of millet-seeds to that of peas, densely packed together; there was also tuberculous matter in the glands of the neck and chest, liver and spleen; the lungs, compressed by effusion into the pleural cavities, were perfectly free from tubercles. In the 6th case, there was tuberculous matter in the bronchial glands. In 21 autopsies of children, he only found the lungs free from tubercles once; this was in a boy 11 years of age, who, besides a considerable serous effusion into the ventricles of the brain, had two large masses of tubercle in the cerebellum, many small ones on the surface of the liver, and caries of the vertebrae.

"In 146 adults affected with tubercles in the lungs, there were only 35 in whom the disease was confined exclusively to these organs; in the remaining 111, or nearly three-fourths of the whole, the disease had extended to other organs. In children, the proportion in which the deposit of tubercles is limited to the lungs is smaller than in adults, M. Cless finding only 3 cases out of 20, in which all other organs were free. Barthez and Rilliet state the proportion to be 23 to 269. In 166 cases (adults and children) of tubercular deposit in the lungs, there were only 13 in which the disease was confined to one lung; of these, in 10 cases it was the right lung, in 3 the left; it is true, that in the greater number of cases the disease had not advanced very far. When both lungs were affected, the right was usually most diseased, the proportion being 45 to 30; this result is not in accordance with the observations of Louis and others. In 146 adults, in whom the lungs were diseased, vomicae were found 105 times, there being none in the other 41 cases; in children, the proportion in which vomicae existed was smaller, there being only 9 cases out of 20 in which they were found; usually, the younger the child is, the less frequent is the occurrence of vomica; the very young ones most commonly sink under an acute tubercularization, which causes death before passing on to suppuration; moreover, young children are frequently carried off by other diseases superadded to the tubercular deposit, such as acute hydrocephalus, &c. Out of 166 cases, pneumothorax, from rupture of a vomica, was noted as occurring four times, twice in the right lung, twice in the left. M. Cless relates two exceptions to the established rule, that the usual seat of tubercles is at the summit of the lungs; in these two cases the disease affected the lower lobe especially, and in one there even existed a vomica."

M. Rochoux\* very justly blames the majority of microscopists, that in their examination of tubercular deposit, they have not observed it at a sufficiently early period, but have selected instances in which the characteristics of the formation are obscured by the products of destruction of the surrounding pulmonary tissue. If a mass of commencing tubercular matter be placed under the microscope, it presents, according to Rochoux, a rounded form of 0.15 to 0.20 of a millimetre in diameter; and imbedded in the substance of healthy lung structure. In this state it cannot be removed without the destruction of numerous filaments of healthy tissue with which it appears to be necessarily connected. In color, tubercle is semi-transparent, according to this observer, with a slightly roseate tinge. In internal texture it resembles the crystalline lens, being composed of a filamentous tissue disposed in a regular order; a section viewed under a power of 600 diameters exhibits a metallic lustre. The inflammatory origin of tubercle is maintained by Zehetmayer,† in a paper in which he describes minutely the process by which he conceives that the plastic deposit of pneumonia is converted into tubercular matter. His views, however, are, like many of those of his countrymen, too hypothetical for these pages; suffice it to say that he considers that the conversion of effused fibrin into tubercle depends upon the deficiency of the former in serum, causing an impediment to its resolution; for, says he, as crystals cannot form in a too concentrated solution, so the fibrin cannot be converted into pus, which according to him is the natural process of resolution, unless there be a sufficient quantity of serum. When, therefore, the serum is by any means abstracted in pneumonia, either by over-depletion, or by the occurrence of an exhausting diarrhoea, he regards the tubercular metamorphosis as inevitable.

The influence of anterior disease on the production of tubercle is closely investigated by Bouchut in his late work on the diseases of children. There are many diseases, according to his belief, which have a natural tendency to originate the tubercular

\* Archives Générales, Mai, 1845.

† Zeitschrift der k. k. Gesellschaft der Aertze zu Wien.

diathesis, but in none is their tendency so palpable as in measles. To this opinion, which it must be allowed is very general in this country, and is held by many trustworthy observers, we may cite the opposite conclusions of M. Lugol ("On the Causes of Scrofulous Diseases"). This latter author positively denies that any of the maladies which are commonly supposed to have the power of producing tubercular diathesis, are capable of so doing. That phthisis and other forms of tubercular disease frequently show themselves for the first time after an attack of measles, scarlatina, the puerperal state, &c., he fully admits, but he regards the subsequent disease not as produced *de novo*, but merely as a manifestation of a previously existing scrofulous or tubercular diathesis, which had remained dormant until called into activity through the depressing agency of the prior disease.

18. *Entozoa*.—Some very interesting remarks upon the natural history and pathological relations of this class of parasitic animals occur in a lately published work by Klencke,\* a concise analysis of which is to be found in the 'British and Foreign Medical Review' of the present month.† The main object of the communication appears to be, to declare the result of experiments by inoculation of the germs of different forms of hydatids by which he appears to have fully succeeded in ingrafting the parasitic animal. With respect to the order of intestinal worms, the author conceives that the ova are deposited with the feces, and are hatched externally to the body, as he has frequently discovered the embryos of the species which are known to infest the human race, in the water of ditches. He entertains certain fanciful notions concerning the manner in which these embryos gain admission into the human body, but excludes from his consideration the very obvious way of ingestion with the food or drink.

#### § IV.—*Cachexia*.

19. *Antagonism of cachexia*.—The antagonism of cachexia is one of the favorite doctrines of the day, with the continental physicians. M. Trousseau‡ has lately added to the list of mutually exclusive disorders, by affirming that there exists an antagonism between the chlorotic and the tubercular diathesis. He carries this hypothesis so far as to discountenance the exhibition of iron in the former class of affections, under the idea that in proportion as you cure the one state of the constitution, you render it amenable to the other. We need scarcely point out the absurdity of such notions; if no other grounds of objection were to be adduced, the experiments of Coster are totally subversive of M. Trousseau's fancies.

The mutual exclusion of tubercle and cancer, which is held by some, is satisfactorily denied by Lebert§ from direct post-mortem investigation. He adduces three cases in which both products coexisted. A similar case is also recorded by Dr. Martin of Munich.||

Sconlein admits the antagonism of phthisis and intermittent fever; on the other hand, MM. Sigaud¶ and Lefevre\*\* distinctly deny it. The opinion of the former is particularly worthy of credence, inasmuch as he was at one time a zealous advocate of the doctrine. The experience of the latter is derived from the neighborhood of Rochefort, where both diseases are unusually common. Dr. Chambers†† of Colchester, in a recent communication upon intermittent fever, alludes to a case within his own knowledge, in which a patient was attacked with well-marked quartan ague, when in the last stage of phthisis.

## PART II. SPECIAL PATHOLOGY.

### § I.—*Diseases of the Nervous System*.

20. *Insanity*.—The period embraced in the present Report has been distinguished

\* *Impfversuche und Natur-historisch Pathologische Untersuchungen zur Erforschung der Helminthiasen als Contagion.*

† *Journal de M. Beau, Juillet, 1845.*

‡ *Allgemeine Zeitung, and Lancet, August, 1845.*

\*\* *Gazette Médicale, Sept. 6.*

Unter suchungen zur Erforschung der Helminthiasen  
† October, 1845.

§ *Muller's Archives, Heft 2, 1844.*

¶ *Du Climat et des Maladies du Brésil, &c.*

†† *Provincial Medical Journal, Oct. 29, 1845.*

for more than the usual number of communications upon this profoundly interesting subject. The last reports of the numerous institutions for the reception of the insane, both in this country and America, are especially remarkable for the importance of their contents; lectures upon the disease in all its bearings have been published under the auspices of Pinel, Conolly, and Baillarger; discussions have taken place in the learned societies of Paris; and lastly, several monographs of variable value have issued from the press. Among the latter, we may mention two small works by Drs. Steward\* and Joseph Williams.† Of these, the first embraces, though in the briefest manner, every department in the study of the affection; the second is occupied chiefly with the consideration of the remedies in general use, and more particularly those of narcotic properties.

Our space will not allow of an extended analysis of the various communications referred to, although several of them would well repay the labor necessary for the task; it will be more consistent with the intention of these Reports to select some points of paramount interest, and to endeavor to mark out the progress of science by collating the opinions of the individual writers.

We shall not occupy the reader's attention with the more speculative doctrines which the investigations of insanity always call forth;—as to how far or how little a material cause is in all cases present, either in the form of palpable cerebral lesion, or in the more microscopic changes which are inappreciable to ordinary vision; or whether insanity may not be in some cases a purely psychological disorder—the exaggerated manifestation only in fact of the less exalted principles of the human mind. We shall proceed at once to the consideration of certain questions connected with treatment, upon which a difference of opinion is most prominent.

**Bleeding.**—There is no disease, perhaps, in which the lancet of the routine practitioner has done more irreparable mischief than in the treatment of mania. Dr. Earle‡ observes that bloodletting has probably confirmed more cases of insanity than it has cured." Dr. Conolly§ speaks in terms of equal force, affirming that the worst cases which have come under his notice have been those which have been largely bled before admission, and that in six years' experience at Hanwell he has never seen a single case which called for general depletion. Dr. Williams|| and Dr. Steward both appear to think bleeding necessary in some instances, but agree with the former writers that it is pernicious as a general remedy. Dr. Williams states that "it should never be resorted to without paramount necessity, and then not largely." The cases in which both he and Dr. Steward think it advisable are in the case of suppressed customary evacuations, as epistaxis, and in the critical age in females. The topical abstraction of blood is not condemned by any of the above writers, but, on the contrary, is regarded as a remedy of great power.

**Narcotics.** The exhibition of this class of medicines in mania forms the subject-matter of a large portion of Dr. Williams's work; we shall, therefore, briefly recapitulate the results of his experience. Opium is contra-indicated in all cases in which the restlessness is accompanied with great heat of skin, and where the nervous excitement is evidently caused by increased arterial action. It is also, he observes, contra-indicated in mania associated with paralysis or evident organic cerebral disease. Persons laboring under suicidal mania generally bear opium well. Hyoscyamus is deservedly eulogized, especially where it is necessary to keep up a continued narcotic effect, as it diminishes excitement without producing many of the unpleasant effects of opium. The emdemic use of belladonna is also well spoken of.

Narcotics do not enter into the list of curative agents mentioned by Dr. Steward.

**Purgatives** are of questionable utility in mania, unless they possess more of an alternative than drastic quality. Dr. Woodward (3) and Dr. Steward are both agreed upon this point. Dr. Williams, however, is disposed to regard them in a more favorable light.

**21. Hydrocephalus acutus.**—Dr. Smith,¶ of Leeds, has recently written a small work upon this disease, apparently addressed rather to the public than the profession. The malady, as far as its symptoms and progress are concerned, is well described, though there is little stated which is not to be found in the works of Golis, Smyth, and Whytt.

\* Practical Notes on Insanity.

† Essay on Narcotics, &c., in Insanity.

‡ Report on the Bloomsdale Lunatic Asylum. Philadelphia Medical Examiner, May, 1845.

§ Lancet, Oct.

|| Op. cit., p. 30.

¶ On the Nature, Causes, and Treatment of Acute Hydrocephalus. London, Churchill. 1845.



The chief novelty contained in this publication is one to which our readers will probably find some difficulty in subscribing, namely, that the disease is a *fever*, to which he gives the name of *hydrocephalic fever*, and like other fevers not characterized by any invariable organic change. Its inflammatory nature is distinctly denied. Another novelty introduced by the author is the affirmation that the disease is not hereditary, and yet, curiously enough, in a well-written chapter on the prevention of the disease, he would endeavor to extinguish it mainly by improving the constitutional vigor of the parents; what is this but a virtual acknowledgment that the predisposition may be transmitted from the parent to the offspring, in other words, that the disease is hereditary? It is strange, moreover, that the author fully admits the affinity of the disease to scrofula; but who doubts the hereditary nature of the latter?

The treatment laid down by Dr. Smith is that which would be suitable in "any other nervous fever;" if phrenetic symptoms predominate, depletion is advised; if symptoms of "debility, nervous irritation, and struma," depletion is to be avoided, and laudanum, ether, &c., substituted. The employment of mercury is stated to be founded on erroneous principles.

22. *Extensive suppuration of the brain*.—A case is related by Dr. Sumner, of New-Haven, U. S., of a boy æt. 11, who after a fall upon the ice was seized with excessive pain in the head, constant delirium, jactitation, &c. The most remarkable symptom, however, was the extraordinary accuracy and extent of his memory, which declared itself in the intervals of his delirium. After death the whole surface of the brain was found to be covered with pus spread out beneath the arachnoid.\*

23. *Organic disease, tumors, &c., of the brain*.—*Colloid Cancer*.—The following case recorded by Dr. Thomas Miller,† if not unique, is sufficiently rare to be worthy of commemoration. The patient, a man æt. 40, complained of severe pain at the back of the head, with hemiplegia of the right side, and protrusion of the tongue to the left. Deglutition was difficult, the patient often coughing up his food. The left side of the tongue was likewise observed to be paler than the opposite. The patient continued in this condition for some time, but gradually lost flesh and strength. After death the principal lesion was found, as was expected, in the cranium. The brain and cerebellum were substantially healthy, but in the left occipital fossa a gelatinous tumor was discovered, which pressed upon the left lobe of the cerebellum, the junctions of the pons and crura cerebri, and the origins of the 6th, 7th, 8th, and 9th pairs of nerves. The tumor appears to have commenced within the internal ear, making its entrance into the cranium through the internal auditory foramen. Thence it spread over the occipital fossa, and sent prolongations out of the calvarium, through the foramen lacerum and the carotid foramen. These two prolongations coalesced and compressed the 9th nerve as it reached the tongue. The symptoms of this case were thus satisfactorily accounted for. The pressure on the 9th pair was the cause of the paralysis of the œsophagus, and of the protrusion of the tongue to the side opposite to that which was hemiplegic. The interference with the par vagum accounted for the disturbance of the respiration and heart's action. The hemiplegia of the right side was also due to the same compressing agency.

24. *Cerebellum, diseases of*.—The difficulty which surrounds the diseases of that portion of the nervous system contained within the solid walls of the cranium, and the present uncertainty of the signs by which we endeavor to distinguish disease of one portion of the cranial contents from another, is very clearly pointed out in an essay by M. Toulmuche,‡ entitled "Considerations on the Uncertainty of the Functions attributed to the Cerebellum, and on the Absence of Symptoms by which we can recognize during Life the different diseased Conditions of that Organ." The author investigates, in the first place, the physiological doctrines which assign as the office of this portion of the nervous system the presiding over the generative faculty, and of inducing a co-ordinate and harmonious action in the muscular system. Both these doctrines are tested by the result of observations, in which disease was found to exist in this organ after death. With reference to the influence of the cerebellum upon the sexual organs, he clearly shows that if in some instances disease of that organ has been accompanied by excitation of the generative faculty, in others there was no such manifestation. So also with regard to the regulation of muscular movements.

\* American Journal of the Medical Sciences, April, 1845.

† Philadelphia Med. Examiner, April, 1845.

‡ Gazette Méd., No. 29, 1845.

These observations are to a certain extent confirmed by the reports of two cases of disease of the cerebellum, one of scirrhus tumor which occurred to M. Prestel,\* the other one of fungoid disease, witnessed by Mr. Taylor,† of Guildford. In neither of these cases was the harmonious action of the muscular system at all interfered with, neither was there any erotic excitement. The difficulty of arriving at a satisfactory diagnosis depends, as is correctly observed by M. Toulmuche, upon the impossibility of separating symptoms which arise from disease of the cerebellum, from those dependent upon almost inevitably coexistent disturbance of the cerebrum. The symptoms upon which he is inclined to place the greatest reliance are, pain in the occipital region, continual giddiness, paralysis of the opposite arm and leg not implicating the tongue; diminution of the sensibility of the skin, integrity of the intellectual functions; blindness, deafness, and finally coma and other symptoms common to encephaloid diseases in general.

25. *Muscular paralysis*.—Several cases of local muscular paralysis have lately been put on record,‡ the most interesting of which are two in which the serratus magnus was the muscle affected. The principal characteristic of this lesion, in both cases, was a tilting upwards of the inferior angle of the scapula, by which it was raised the distance of two or three vertebrae above its fellow. As a natural consequence, the superior anterior angle, and with it the shoulder, was depressed. The cause of the paralysis was a strain in one instance, and the effect of cold in the other. M. Rayer supposes that the proximate cause is a paralysis of the external thoracic nerve, similar to the well-known affections of the seventh pair. Two cases subsequently occurred to M. Nelaton,§ in one of which the paralysis was double.

26. *Paralysis of the seventh pair, with partial loss of taste*.—The case recorded under this title is replete with physiological interest. The subject of it was a lad, æt. 10, who was seized with severe pain in the right ear, followed by suppuration, and complete paralysis of the right side of the face, without loss of sensation. In addition to these, the ordinary symptoms of paralysis of the portio dura, it was found that the sense of taste was imperfect on the corresponding half of the tongue, quinine producing no disagreeable taste; while, on the opposite side, its nauseous flavor was perceived as usual. It was clearly ascertained that ordinary sensation was as perfect on one side as the other, *gustation* alone being disordered.

In reference to this, and three similar cases, the author calls our attention to the fact, that the sense of taste was not entirely abolished, but merely blunted, and that it followed exactly the intensity of the facial paralysis, increasing and improving, *pari passu*, with that symptom. In investigating the physiological explanation of the phenomenon, he disputes the supposition of Longet, that the loss of taste depends, in these cases, upon dryness of the tongue and fauces, consequent upon the continual dribbling of the saliva from the paralysed lips,—as well as that of Berard, who attributes it to paralysis of the vidian branch of the cordi tympani. His own mode of accounting for the loss of taste is, that it is in no way connected with the fifth pair, but depends essentially upon a motor paralysis of the contractile element of the papillæ, which renders them unable so to apply themselves to sapid substances as that these should produce their ordinary effect upon the true gustatory nerve.||

Two cases of the ordinary form of facial paralysis are mentioned by Mr. Harmer Smith, of Sheffield, which were supposed to originate in the excessive use of tobacco.

27. *Chorea*.—Dr. Corrigan has exhibited the Indian hemp in this disease, with the best effects. The details of the cases, which we shall here briefly allude to, will be found in an early number of the Dublin Hospital Gazette. The first was that of a girl, æt. 10, in whom the disease affected the muscle of both upper and lower extremities, as well as those of the tongue. She was ordered five drops of the tincture three times a day (for formula, vide “Half-Yearly Abstract,” Vol. I., p. 346). In eleven days great amendment had taken place, when the dose was increased to fifteen drops. This was continued for five weeks, when a perfect cure was obtained. A second case was discharged in six weeks. In a third case, which had lasted ten years, a cure was accomplished in a month. Dr. Ross,¶ of Boulogne, states that he has derived great

\* Gazette Médicale, Août, 1845.

† Gaz. des Hôpitaux, No. 79, Sept. 2, 1845.

‡ Archives Générales de Médecine.

§ Lancet, June, 1845.

† Lancet, Aug. 23, 1845.

§ Gaz. Méd., No. 79.

advantage from strychnia in the same affection, in the dose of one-eighth of a grain thrice a day.

28. *Tetanus*.:—The references at the foot of the page\* appertain to the reports of four successful cases of tetanus. The first instance was the consequence of crushing of the finger. The treatment consisted of the extract of belladonna internally, blisters to the spine, and turpentine enemata. In the second case, which was under the care of Mr. Solly, the remedies employed were turpentine enemata, mercury to salivation, tincture of the Indian hemp, and wine. The third and fourth cases, which supervened upon a gun-shot and contused wound, recovered under the use of bleeding and tartar emetic.

29. *Tarentismus*.:—This extraordinary nervous affection has recently been observed by M. Gozzo,† a Savoyard practitioner of some note. The only remark worthy of commemoration contained in his essay, is the refutation of the generally received idea of the effect of music upon the patients. The disease is acknowledged to depend upon the bite of the spider, and occurs, according to his experience, most commonly in the months of June, July and August, at which times the people are exposed to the attack of the insect during their agricultural labors.

## § II.—Diseases of the Respiratory System.

30. *Auscultation*.:—The general doctrines of auscultation, both of the lungs and heart, have recently been reviewed by Dr. Marshall Hughes.‡ The author's object in publishing his manual, is to afford to the medical student an easy and progressive acquaintance with the elements of the science, and, as such, it is worthy of every commendation. To the more finished stethoscopist it is comparatively of little value, as it contains nothing that he has not long since made himself acquainted with in a more detailed form in the writings of Laennec, Martinet, Barth, Roger, Fourquet, &c.

31. *Diseases of the Larynx and Trachea—Œdema glottidis*.:—In Art. 6 will be found a short account of a memoir upon this subject, by M. Lesiauve. The symptoms, progress and diagnosis of the disease are well described, but do not require further comment in this place. The only point open to discussion is the opinion entertained by the author that there is an idiopathic form of œdema,—one entirely unconnected with inflammation. In this view he is opposed by the majority of pathologists; but we may state that Dr. Watson§ fully admits the distinction insisted upon by the author, and gives certain rules by which the inflammatory and non-inflammatory œdema may be recognized. It cannot, however, be denied that the latter is infinitely rare in comparison with the former variety.

32. *Croup*.:—M. Forget|| writes for the purpose of recommending repeated emetics, not as they are generally exhibited, at the onset of the disease only, but in the latter stages, in order that the false membranes may be detached by the agitation of the respiratory passages caused by the act of vomiting. He inveighs against the custom which we hope, however, if it exists, is confined to his own country, of directing the treatment solely against the initiatory inflammation, to the neglect of those effects of the disease which are the immediate cause of death. His practice is to give an emetic three or four times in the day, until all traces of the tracheal membrane have disappeared.

33. *Phthisis*. Dr. Latham¶ mentions a circumstance in the history of phthisis which is worthy of being made generally known, especially as it is calculated to afford assistance in the diagnosis of recent tubercular deposit. He states that a murmur is often heard in the earlier stages of the disease, over a space bounded by the sternum and the cartilages of the second or third rib, when no normal heart sound is to be heard in any other situation. The murmur is of a gentle blowing character, and accompanies the systolic movement of the heart. No explanation is given of the sound, but the author hints that it may possibly have its seat in the pulmonary artery. The surmise is doubtless correct, as in the presence of tubercular deposit exerting slight

\* Philadelphia Medical Examiner, June, 1845; Medical Times, July 19, 1845; Provincial Medical and Surgical Journal, August 27, 1845; Gazette des Hôpitaux, Septembre.

† Annali Universali de Medicina: in Gazette Med., No. 17. 1845.

‡ Clinical Introduction to the Practice of Auscultation. 12mo. London: 1845.

§ Lectures, vol. i., p. 808.

|| Bulletin de Thérapeutique, Mars, 1845.

¶ Lectures on subjects connected with Clinical Medicine, vol. i.

compression upon this artery, or its primary ramifications, we have every physical condition necessary for the production of the murmur described. Dr. Winn,\* of Truro, has noticed this murmur in a single instance; but it was heard only during expiration, and disappeared as softening took place.

M. Rayer† has continued his important studies upon the comparative anatomy and pathology of phthisis. Among the many interesting points which he touches upon, we select that of the cretaceous deposits occasionally found in the upper lobes of the lungs. The author believes the doctrine which attributes these deposits to the transformation of tubercular matter as far too exclusive; and considers that they arise far more frequently in small deposits of pus than in tubercle. As we have stated in a former Report (Vol. I., p. 199), we are inclined to look upon the notions of the curability of consumption derived from the presence of these concretions, and fissures in the lung, as considerably exaggerated; we are glad, therefore, to see the opinion participated in by so accurate an observer as Rayer.

In reference to the etiology of consumption, some very curious as well as important results have arisen out of the laborious investigations of Dr. Guy as to the influence of employments on health. He has satisfactorily determined not only the great power exercised by in-door occupation upon the development of the disease, but he has ascertained, in addition to this, that muscular action has a certain preservative influence, even under the unfavorable circumstances attendant upon a confined atmosphere. This fact is illustrated by a comparison of the liability to the disease in pressmen and compositors, two classes who are exposed to the same disadvantages as regards confinement in ill-ventilated apartments, &c., but with this difference, that the pressman undergoes considerable muscular exertion, the other none. It is a fact no less curious than unexpected, that the former is much less frequently the victim of consumption than the latter.

34. *Value of naphtha in phthisis*:—Dr. Hastings, of London, has issued a second edition of his work on the curability of consumption by this agent, in which he adduces further evidence in its favor. Dr. Hocken, the only person who has publicly supported the assertions of Dr. Hastings, has unfortunately offered a practical demonstration of their fallacy in his own person, having lately fallen a victim to the disease he professed to cure. Dr. Bellingham‡ and Dr. Benson§ have both subsequently recorded their experience of the remedy, and both strongly deny that it possesses the most remote power over the progress of tubercular disease. [We may be allowed to state, that in common with many others we have endeavored to form an independent opinion of the merits of naphtha, and, moreover, have been at some pains to obtain the naphtha. The result of a very considerable number of trials is this: That in advanced cases of phthisis it has not the slightest effect in retarding the progress of the disease, or even in mitigating any of the symptoms. In some few instances it appears to impart a fictitious feeling of improvement for the first few days, in this respect operating as a simple stimulant, but in the majority it is borne with difficulty, exciting nausea, vomiting, or a feeling of gastrodynia. In some cases of incipient phthisis, we at first were inclined to anticipate benefit, but the lapse of a few weeks or months invariably dissipated our hopes. In cases of chronic bronchitis, and in the catarrhs of relaxed habits, in which stimulant expectorants might be expected to be beneficial, naphtha has certain advantages, and these we are constrained to believe are the forms of disease which have been either ignorantly or designedly called phthisis in many of the reputed cures of that malady.]

35. *Tapping tubercular cavities*:—This proceeding, which has been revived by Dr. Hastings, of London, has been subjected to severe but deserved criticism by Dr. Campbell.|| This writer insists upon the inefficacy of any local means, *per se*, in the cure of a disease essentially constitutional. He properly observes, that even if the intention of the operation should be accomplished, which he maintains it never can be, and the walls of the tuberculous cavity be brought into apposition, the disease is as far as ever from being cured, for we have still remaining that condition of blood which leads to the deposition of tubercular matter.

36. *Empyema.—Paracentesis thoracis*:—Dr. Faure,¶ physician to the Military Hospital at Toulon, communicated to the institute the results of his experience on this

\* Med. Gaz., Oct. 17, 1845.

† Dublin Medical Press, June 4.

‡ Acad. des Sciences Méd., France, Sept. 27.

§ Med. Chirurg. Review, July, 1845.

¶ 1b., July 2.

|| Lancet, June 14.

subject. He is of opinion that the puncture of the thoracic walls, performed with prudence, in order to evacuate a collection of fluid accumulated in the pleura, is an operation totally unattended by danger, and generally followed by considerable relief to the patient. The danger most to be dreaded from the paracentesis thoracis, is generally supposed to be the introduction of air into the chest. Fears from this cause are, according to Dr. Faure, nugatory, the quantity of air introduced into the chest during the operation being wholly unimportant, and the introduction ceasing altogether the moment the canula of the trocar is withdrawn from the wound. The apprehensions entertained are therefore founded only in theory, but not confirmed by practice. Further, it should be remembered that the disease for which the operation is proposed frequently baffles the skill of the physician, and groundless fears should not be allowed to deter him from a line of conduct which may, if it do not in all cases save the patient's life, at least alleviate his sufferings and prolong his existence.

37. *Pneumonia*.—The occasional occurrence of inflammation of the lungs, as a complication of acute rheumatism, is mentioned by Drs. Latham,\* Burrows,† and Schonlein.‡ The proportion in which it happens, and the ratio it bears to heart affections, is thus stated by the former of these writers: Of 136 cases of acute rheumatism noticed by him, pneumonia or other lung disease occurred in 24, or in about 1 in 5½ cases; of those instances in which the heart was unaffected, the proportion was 1 in 9; but in those cases in which the heart was inflamed, the lungs were also inflamed in 1 in 5. Hence, as the author concludes, the occurrence of inflammation of the lungs is not an event much to be dreaded in acute rheumatism, unless the heart be simultaneously affected, in which case it forms a serious addition to a disease already sufficiently full of peril. Dr. Latham has noticed that pulmonic inflammation is not to be expected in the course of rheumatic fever, when the endocardium alone is complicated; the dangerous connexion appears to be between inflammation of the pericardium and of the lungs. These various points are well illustrated in the following statistics:

	Cases.	Cases.
In rheumatism without heart affection	46	the lungs were inflamed in 5
“ with endocarditis . . .	63	“ “ 7
“ with pericarditis . . .	7	“ “ 4
“ with endocarditis and pericarditis combined }	11	“ “ 8

Dr. Upshur has added fresh evidence to that already mentioned in our first volume, in favor of the efficacy of the iodide of potassium in the suppurative stage of pneumonia. Several cases are related by him in which its agency was well defined and incontestable.

38. *Gangrene of the lung*.—The *Gazette des Hôpitaux* of August 30, 1845, contains a brief critical inquiry into the pathology of this lesion, in which the writer endeavors to show that Laennec is correct in regarding it as, comparatively speaking, seldom the result of pneumonia, but that it is to be considered as one of the local effects of a general debility of the system, and as such is analogous to the gangrene in the extremities of old and debilitated persons.

[It is certain that gangrene of the lung is generally seen to occur in subjects worn out by dissipation, and more particularly in drunkards. It is not improbable that a more accurate investigation of these cases might trace some connexion here, as elsewhere, between the occurrence of gangrene and obstructions of the pulmonary vessels by fibrinous coagula, independently of inflammation.]

39. *Hæmoptysis*.—In the “Summary of the Transactions of the College of Physicians of Philadelphia,”§ Dr. Morris has referred to four cases in which hæmoptysis occurred in infants of the age of three months, one of which was fatal. An instance is also cited by Dr. Walker,|| of Teignmouth, in a child four years old. These examples are interesting only from the rarity of the symptoms in subjects under the age of fifteen, as stated by M. Louis, Green, and others.

40. *Emphysema*.—The anatomical site of this affection is one of the questions which give rise to continual discussions. The latest writer upon the subject is M.

\* Op. cit., p. 161.

† Lancet, July 26.

‡ Clinical Lectures reviewed in Med. Chirurg. Review, Oct., 1845.

§ Amer. Jour. Med. Sciences, July, 1845.

|| Prov. Med. Journal, Aug. 12, 1845.

Bonino,\* who endeavors to compromise the question as to the vesicular or interlobular situation of the air, by admitting that there are two or three varieties of the disease existing, and that each is distinct in its causes, progress and result. The reason that interlobular emphysema does not coexist with the vesicular form, he states to be, that at the same time that the air-cells become gradually distended, the parenchymatous structure of the lungs is condensed under the pressure, so that at length, when rupture takes place, the air is prevented from gaining admission into the interlobular spaces. In that form of emphysema which occurs during labor, paroxysms of hooping cough, &c., the air-cells give way with a suddenness which precludes the above-mentioned condensation of the intervesicular tissue.

M. Piedagnal† maintains that death in emphysema of the lungs generally results from the penetration of the extravasated air into the vascular system. In support of this opinion he adduces several cases in which air was found after death in the arterial system of the brain.

41. *Asthma*.—Dr. Casey‡ describes the effects of the iodide of potassium as highly satisfactory in this disease, having exhibited it in twenty-five cases with success.

42. *Black pulmonary matter*.—In our last Report (Half-yearly Abstract, Vol. i., p. 211), we gave an account of M. Guillot's researches on the carbonaceous deposit which is found in the lungs of old people, and which that author determined to be quite independent of any inhalation of particles from without. The communications of Dr. M'Kellar§ and Dr. Brockman|| which come within the limits of the present half-year, clearly show that a diseased condition of the lungs is induced by the inhalation of carbonaceous matter, and that such matter is seen to accumulate in great abundance in the lungs of the persons affected. The essential character of the miner's asthma, or miner's consumption as it is sometimes called, is shown by Brockman to be a black, pitchy appearance of the lung, varying in extent and depth of color, according to the stage to which the disease has advanced. In addition to this, as is also stated by Dr. M'Kellar, cysts of different sizes are observed, filled with the black matter before mentioned. The texture of the lung is not otherwise altered, according to Brockman, but M'Kellar speaks of serious disorganization to the extent of the formation of large excavations. In examining the etiology of this disease, Brockman is disposed to deny the exclusiveness of the opinion which attributes it to the inhalation of carbonaceous particles alone, but thinks that it depends in part upon the formation of an organic pigment. The reasons assigned by him for this opinion are: 1. That the product itself is partly animal and partly vegetable. 2. That the lung does not increase in specific gravity, which would be the case if it were extensively invaded by extraneous matter. 3. Because it is not necessarily confined to persons who have worked in mines, and, moreover, because some persons of light and florid complexions escape it altogether, although engaged in mining occupations. The theory supported by this author, from the consideration of the above facts, is that the disease is due to a preponderance of "venosity" in the blood, favored by the circumstances under which the miner is placed, as the inhalation of air deficient in oxygen and containing carbonic acid, together with the use of a highly carbonized aliment. In other words, he looks upon it as an effort of nature to relieve the blood of the carbon with which it is surcharged. The disease described by Dr. M'Kellar is evidently a more serious affection than that witnessed by Brockman, and consists of chronic irritation of the pulmonary passages, inducing consolidation and subsequent breaking down of the tissue into cavities of different sizes. We regard it, in fact, as identical in nature with the grinder's asthma, the exciting cause only being different; and in the latter case possessing coloring principles of greater intensity. Like grinder's asthma also, as is shown by Dr. Favell, we conceive that there is no necessary association between the condition of lung in question and tubercular phthisis.

The treatment followed by Brockman, is the removal of the patient from his trade, the exhibition of the peroxides of iron, warm baths, and the Carlsbad water.

43. *General treatment of pulmonary diseases*.—At a late meeting,¶ of the London Medical Society, Dr. Golding Bird drew the attention of the audience to the value of

\* Gazette Méd., No. 31.

† Boston Med. and Surg. Journal.

‡ Ib. from Neumeist. Repertor.

§ Acad. des Sciences, France, Sept. 2, 1845.

¶ London and Edinb. Monthly Journal, Oct. and Nov., 1845

¶ Reported in Lancet, Oct. 4, 1845.

the inhalation of a moist warm air in the treatment of affections of the respiratory passages. Although, as Dr. Bird admitted, there is no novelty in the suggestion, it is one which from its extreme simplicity is too often overlooked. We are frequently in the habit of availing ourselves of its good effects by the aid of an ordinary tea-kettle, the steam of which is made to diffuse itself through the room. Dr. Bird advises the precaution of previously closing all crevices by pasting paper over them, a suggestion which doubtless adds much to the efficacy of the plan.

### § III.—Diseases of the Circulatory System.

44. *Auscultation of the heart.*—In a work to which we have before had the satisfaction of referring, Dr. Latham introduces certain observations respecting the physical signs of cardiac disease, which appear to us replete with practical value. He divides the murmurs occasioned by disease into two great classes, the endocardial and the exocardial; the former single for the most part, and soft and blowing; the latter almost invariably double, and of a rougher character. He condemns as unprofitable and needless, the minute subdivision of endocardial murmurs, which many auscultators describe for the sole purpose, it would appear, of confusing a subject otherwise sufficiently simple and intelligible; and suggests that we should be satisfied with the knowledge that a particular murmur is endocardial without paying any nice attention to its *blowing* or *sawing*, or *filing* characters. As Dr. Latham justly observes, the appreciation of heart disease, after all, is not to be derived from the quality of the sound, but by taking its character in connexion with the space in which it occurs, its exact ratio to the movements of the organ, and above all in its connexion with other information to be derived from an examination of the condition of those organs, as the lungs and the liver more especially, which are known to exercise a powerful influence over the heart's action.

45. The possibility of distinguishing between murmurs originating in the pulmonic and aortic valves respectively, has lately been fully discussed upon the occasion of the reading of a paper before the Medico-Chirurgical Society, by Mr. Ormerod of Caius College, Cambridge, in which this possibility is strongly maintained. The cases in which a pulmonic murmur is found were stated to be chiefly of two kinds: cases of anæmia, and cases of acute rheumatism, the former greatly preponderating. Dr. Williams stated his belief that, as a general rule, murmurs that are propagated along the carotid arteries, are aortic, whatever may be their original intensity as regards the organ itself. On the other hand, but by no means necessarily, he thinks that a murmur confined to the middle or right border of the sternum might be pulmonic. Dr. Kingston judiciously observed that in many cases the stethoscope was insufficient to decide the point, and suggested that the diagnosis would derive greater assistance from the history of the case. If the sound followed rheumatism or primary disease of the heart, he thought that it might safely be attributed to the aortic valves; if, on the contrary, it was consequent upon lung disease, and was accompanied by jugular pulsation, it might be considered as arising in the pulmonary artery.\*

46. We have in our former Report (Vol. i., p. 212), expressed our belief that a more extended inquiry would show that disease of the mitral valve does not give rise to a cardiac murmur, but that such murmur, when it is present, is due to coexistent disease of other parts of the heart. Dr. Barlow† has recently likewise expressed a similar opinion, and accounts for the murmur which doubtless very frequently attends disease of that valve, upon the supposition that it is caused by distension of the right ventricle. This distension, he affirms, almost always accompanies diseases of the mitral valves, and is declared by the white patch referred by Mr. King to attrition, by others to slight attacks of pericarditis.

47. *Connexion of heart disease with rheumatism.*—The following statement embodies the experience of Dr. Latham‡ upon the matter. The total number of cases of acute rheumatism from which he draws his conclusions is 136, of which the heart was affected in 90, exempt in 46. Of the 90 cases, the endocardium alone was the seat of disease in 63; the pericardium alone in 7; the two membranes combined affected in 11. Three cases were doubtful. Upon these facts the author comments in terms

\* Reported in *Lancet*, *Medical Times*, and *Medical Gazette* &c.

† *Guy's Hospital Reports*, Oct., 1845, p. 306.

‡ *Op. cit.*, p. 144.

which cannot be too strongly impressed upon our minds. It is believed, he observes, that among the sufferers from acute rheumatism, one now and then has his heart inflamed; the occurrence is looked upon as an accident, and as not being common. But we see here, that so far from being exceptional, some affection of the heart is the rule in acute rheumatism, occurring in two thirds at least. Again, the pericardium is generally supposed to bear the brunt of the inflammation under these circumstances, but it appears in reality that for one instance of pericarditis, the lining membrane of the heart is inflamed nine times. These are indeed, as Dr. Latham observes, momentous facts, for when we further consider that out of 63 cases, the heart is fully restored to a healthy condition in only 17, we must no longer consider acute rheumatism as a trivial disease, as we fear is too commonly the case, but one which, for the sake of humanity, the physician should watch from hour to hour. (14.) For much useful information in connexion with the cardiac complication of acute rheumatism, the reader is referred to a series of Clinical Reports by Dr. Taylor, which appear in several consecutive numbers of the *Lancet*.

48. *Pericarditis*.—Dr. Latham\* has made a remark in reference to this disease, which, although it is opposed to general belief, yet, considering its source, is worthy of commemoration. It is to the effect that the friction-sound is neither "abated nor abolished, nor otherwise altered" by the effusion of serum into the cavity of the pericardium. He explains this fact upon the presumption that the heart does not yield to the pressure of the fluid to such a degree as to prevent its surface coming into contact with the opposed membrane. In the pleura the case is different, because the lungs are readily compressed.

The same author calls attention to the fact, that pericarditis is very apt to occur in cachectic states of the system, and towards the close of other diseases, and after severe accidents.†

The frequent complication of pericarditis with morbus Brightii is much insisted upon by Dr. Taylor,‡ who remarks, that of fifty cases in which the latter disease was observed, the pericardium was affected in 1 in 10; while of 142 cases in which no kidney disease existed, the traces of pericarditis were found in only 1 out of 35.

49. *General treatment of organic diseases of the heart*.—We have much pleasure in calling the attention of our readers to some sensible remarks by Dr. Scott Allison,§ contained in a small work recently published by him, upon the treatment of organic alterations of the heart, by the preparations of iron. A condensed abstract of the most interesting portion of this brochure will be found in a previous page; we shall, therefore, content ourselves in this place by expressing our belief that the observations of the author will be found of material assistance in the management of the severe affections of which they take cognizance. (Art. 11.)

50. *Functional disease of the heart*.—Dr. Billing alludes to a form of cardiac disease described by Dr. Christison (vide Abstract, vol. i., p. 52), and differs from him in the opinion that the disease is entirely functional; he believes that in these cases there is slight dilatation of the ventricles. He alludes, in explanation of this opinion, to the circumstance that in early life the heart is larger in proportion to the other organs than in adult age; wherefore, as Laennec had previously remarked, children often present signs of hypertrophy, with dilatation, which disappear in after-life. Dr. Billing thinks that the equilibrium which is thus established about the age of puberty, had not occurred in Christison's cases; but that the deficiency would not be discovered until the subjects had been exposed to conditions likely to develop functional disarrangement.¶

An excellent description of several forms of functional disease of the heart, from the pen of Dr. Corrigan, will be found in a former part of this volume. (Art. 10.)

51. *Angina pectoris*.—In a memoir which was recently presented to the French Academy of Medicine, M. Lartigue¶ supports the opinion that angina is a purely neuralgic affection of the cardiac nerves, and is not necessarily connected with any form of organic disease, though it may coexist with many. He carefully distinguishes true angina from neuralgia of the pneumogastric nerve, with which he states that it is frequently confounded. A similar opinion is recorded by M. Mignot.\*\*

52. *Cyanosis, statistics of*.—One hundred and eighty cases of this condition of the

\* Op. cit., p. 132. † Ib., p. 357. ‡ Paper read before Med. Chirur. Society, June 24, 1845.

§ Some Observations on Organic Alteration of the Heart; London, 12mo., 1845.

¶ Dublin Med. Press, July 16, 1845.

‡ Bulletin des Acad., No. 8.

\*\* Bulletin Méd. de Bordeaux, Feb., 1845.



vascular system are analysed by M. Aberle,\* of Vienna, with the following conclusions :

In 100 cases there was deficiency of the septum ventriculorum; in 23 the foramen ovale was open: in 65 it was closed. In four instances the pulmonary artery arose from both ventricles. In 87 cases in which the aorta communicated with both ventricles, the pulmonary artery was much narrowed, or entirely closed, in 37. Two thirds of the cases occurred in males. The duration of life was as follows. In four cases, 24 hours; in sixteen, 14 days; one month in 4; from one to two months in 7; two to three months in 6; three to six months in 8; six to twelve months in 12; one to two years in 7; two to three years in 9; three to four years in 11; six to eight years in 11; eight to eleven years in 13; thirteen to sixteen years in 12; sixteen to twenty years in 8; twenty to twenty-five years in 10; twenty-five to thirty years in 6; thirty to thirty-five in 5; thirty-five to forty-five in 5; forty-five to sixty in 4; seventy years in 1.

53. *Rupture of the Heart.*—A case of sudden death, from hemorrhage into the pericardium, is recorded by Dr. MacLagan,† which is peculiar, inasmuch as the rent did not extend completely through the muscular substance, so as to communicate with the ventricular cavity; but consisted in a tearing only of the superficial fibres of the left ventricle, by which an opening was made into the coronary vein. The symptoms were those of internal hemorrhage; but as the bleeding took place more gradually than in ordinary cases of rupture of the heart, the patient did not sink until the expiration of an hour from the time of seizure. Although the case is one of an unusual kind, it is not without parallel; Cruveilhier describes the lesion under the name of apoplexy of the heart; but here, as in a case lately seen by Dr. Andrews (London and Edin. Monthly Journal, 1845), the blood does not necessarily make its way into the pericardial sac, but is extravasated among the muscular fibres. Of this an instance occurs quite recently in the "Gazette Médicale." The proximate cause of the rupture in both cases is supposed to be a fatty degeneration of the muscular fibre, which renders it less able to withstand the traction of the remaining healthy structure, in addition to the distending force of the column of blood.

54. *Aneurism.*—The periodical press of the last few months contains the description of three cases of aneurism of the heart and great vessels, of more than ordinary interest. The first which we shall mention is one recorded by Dr. Turnbull,‡ of aneurism of the aorta, bursting into the right ventricle. This termination of the disease is exceedingly rare; a single instance is mentioned by Dr. Hope as the only one he had ever witnessed. Another also occurred to Dr. Williams. In all of these cases a continuous rushing bruit was heard over the region of the heart, which Dr. Turnbull considers to be diagnostic of the lesion. The pulse possesses the abrupt jerking character which is observed in aortic regurgitation.

An equally rare case, in which an aneurism of the arch of the aorta burst into the vena cava superior, has been described by M. Cossey.§ The author alludes to a similar case mentioned by Mr. Thurnam, and collecting the prominent symptoms of each, determines that the following signs are indicative of communication between the two vessels:—

1. Great oedema, limited exclusively to the upper extremities, neck and face, arising suddenly, and accompanied by violet discoloration and diminished temperature of the integuments.
2. A marked bruit de soufflet, having its greatest intensity at the upper portion of the right border of the sternum.
3. In one case reflux into the jugular vein, with pulsation, and blowing murmur, existed.
4. A continual painful whizzing in the ears, vertigo, transient delirium, and eventually coma.
5. Dyspnoea, not urgent; occasional slight hemorrhages.
6. Sudden appearance and quick attainment of the maximum intensity of the above symptoms.

Dr. Pareira has lately met with an example of supposed aneurismal dilatation of the septum, with bursting into the right ventricle. The patient was a girl, æt. 15, who died of purulent infection. Dr. Pareira acknowledges the possibility that the anomalous communication might have been congenital, as it was found at that part of the septum which is sometimes deficient from birth. There is, however, one reason not alluded to by Dr. Pareira for thinking that such was not the case in the present instance,

\* Lancet, Aug. 9, 1845.

† Lancet, July 24, 1845.

‡ London and Edin. Monthly Journal, Sept., 1845.

§ Archives Générales, Sept., 1845.

namely, that the pulmonary artery was of its usual dimensions. In all the cases on record of deficiency of the septum and origin of the aorta from both ventricles, the pulmonary artery, as in an instance recently recorded by Dr. Shearman,\* was diminished to a third of its natural size.

The general principles of treatment in thoracic aneurism are extremely well laid down in a paper published in the "Medical Gazette" (Aug. 29), by Dr. Chevers. A summary of the leading points of the essay is given in Art. 13.

#### § IV.—*Diseases of the Chylopoietic System.*

55. *Diseases of the Stomach. Perforation.*—In a recent number of the "Dublin Journal of Medical Science," Dr. Osborne endeavors to ascertain if there be any signs by which the existence of the insidious ulceration of the stomach by which perforation is produced, can be determined during life. The stomach in a healthy state, he observes, is insensible to the sense of touch; but if any portion of its coats be denuded by ulceration, it then assumes a sensibility similar to that of ulcers on other parts of the body. Upon this assumption, he founds his views upon the diagnosis of the disease. He has found that, in certain cases which have proved fatal by perforation, the patient is comparatively free from pain in certain positions, but especially in the semi-erect. This fact, taken in connection with the ascertained frequency of the ulceration upon the lesser curvature, he thinks may fairly be considered to demonstrate that the pain in such cases is caused by the contact of the acrid fluids of the stomach with the ulceration, as would naturally occur when, in the supine position, those fluids rise upon a level with the smaller curvature. The idea is ingenious, and seems to have led to a correct diagnosis in four cases which he details. (Art. 16.)

The importance of distinguishing peritonitis arising from perforation, from that depending upon other causes, cannot be too strongly insisted upon, inasmuch as the indications of treatment, more particularly in reference to the exhibition of medicinal or other fluids, must be widely different. The task of drawing the distinction is not in general one of much difficulty; but as cases occur which will give rise to hesitation, the remarks of Dr. Davies† are worthy of attention. This gentleman founds the distinction upon the suddenness of the access of pain in peritonitis from perforation, from the universal diffusion of the tympanitis, showing that the air is contained in the peritoneal sac, and not in the intestines, and from the great disturbance of the vesical function, which appears to depend upon the descent of the contents of the ruptured viscus upon the fundus of the bladder.

56. *Dyspepsia.*—The various forms of dyspepsia are well treated of by Dr. Dick,‡ in a series of essays, published in the "Medical Gazette;" but as these essays do not admit of a ready analysis, we refer the reader to the original.

57. *Intussusceptio.*—Dr. Henderson§ relates a case of obstruction of the bowels, followed by stercoraceous vomiting, and supposed to depend upon intussusceptio, which he removed, after much trouble, by the use of a tube thirty inches long, one end of which was inserted into the rectum, and then filled with water. The pressure of a column of water of the above height at length succeeded in overcoming the embarrassment.

58. *Diseases of the Liver.*—One of the most important contributions to medical science which it falls to our lot to notice in the present semestrial period, is a monograph by Dr. George Budd, upon the diseases of the liver. The immediate subject of the writer's observations is prefaced by an introductory notice, in which the present state of our knowledge of the anatomy and physiology of the liver is most lucidly laid down; but as the consideration of this portion of the work more properly belongs to another report, we shall proceed to lay before our readers a brief analysis of those subjects which have a direct pathological bearing.

The first chapter, on congestion of the liver, need not detain us, as it is for the most part a recapitulation of the views of its pathogeny, with which the profession has already been made familiar by Mr. Kiernan.

59. *Suppurative Inflammation of the Liver.*—This branch of his subject is handled by Dr. Budd with great perspicuity, and is particularly worthy of attentive perusal, as

\* Provincial Medical Journal, July 30, 1845.  
 † Op. cit., Nov., 1845.

‡ Medical Gazette, Sept. 12, 1845.  
 § Lancet, Sept. 12, 1845.

it affords a clear history of many of those severe cases which go under the name of purulent infection. The manner in which the numerous deposits of pus are formed in the liver and other organs has already been alluded to, and Dr. Budd's opinions detailed in a former part of this Report (vide). The causes of abscess of the liver, as stated by the author, are chiefly three:—1st, mechanical injury; 2d, and more frequent, is suppurative inflammation of some vein; 3d, and the most frequent, ulceration of the lower bowel, as it occurs in dysentery. This latter cause is acknowledged by Ainsley, and occurred in three-fourths of his cases. The author of the present volume is, however, inclined to accord to it a still more extensive influence. Abscess of the liver may also follow ulceration of the stomach, of which instances are cited by the author, and ulceration of the gall-bladder and ducts. Among the symptoms indicative of hepatic abscess, Dr. Budd mentions rigidity of the right rectus muscle; but as it is observed in some other liver affections, it cannot be regarded as a sign of much value.

In his enumeration of the mode in which abscess of the liver terminates, Dr. Budd follows the description of the majority of writers upon the subject. We may here mention one termination, which, as it is not alluded to by him, is rare, or perhaps unique, namely, by bursting into the pericardium. Of this occurrence an instance is reported by Mr. Allan, staff-surgeon in the Mauritius.\* In the treatment of hepatic abscess, Dr. Budd dissuades surgical interference until redness and oedema of the integuments point out that adhesion has taken place between the opposing surfaces of the peritoneum.

60. A communication upon hepatitis, as it appears in Algiers, is furnished by M. Casimer Broussais.† The disease appears to manifest itself much in the same way, and with the same symptoms, as in India; the treatment, however, adopted by M. Broussais is different from that followed by British practitioners. This writer likewise notices the evident connection between hepatitis and dysentery; in five cases only out of sixty-six is there no mention of the latter symptom. Antiphlogistic measures constitute with M. Broussais the principal means of treatment. General bleeding should be had recourse to, unless the patient be too debilitated, or the inflammatory symptoms be moderated, in which cases leeches should be applied to the right hypochondrium. General and local bleeding are so efficacious in the treatment of hepatitis, that we may always calculate on obtaining a notable amelioration by these means, the liver diminishing considerably in size. But therein does not consist the principal difficulty of the treatment; it is the complete eradication of the disease which it is difficult to obtain. The symptoms seem to give way to the means employed; the local pain disappears, the appetite returns, the patient fancies he is well, and only thinks of eating; but the liver is still found large, and painful on percussion—it is still inflamed. If therapeutic agents are suspended, if the diet is increased, and the patient is allowed to consider himself cured, or convalescent, a relapse occurs; and, after several relapses, an incurable abscess forms. As long as any symptom of hepatitis exists, the disease should be treated after this manner—the diet must be light, and recourse had to small local bleeding, to blisters, to cauteries, to mercurial frictions, or to frictions with the iodide of potassium. Purgatives may be tried, but with precaution, as the stomach often, and the large intestines always, are either the seat, or may become the seat, of inflammation. “Mercurial frictions, tried on five of my patients,” says M. Broussais, “gave rise in four to an inconvenient salivation, notwithstanding the return of a few bilious stools, which, it must be confessed, alternated with constipation.” Poultices applied constantly on the region of the liver, and baths, are of great use. Opium, or the salts of morphia, are often very beneficial to soothe the pain and produce sleep. The same measures are also appropriate for the treatment of the dysentery, if it continues to complicate the hepatitis. With M. Broussais's patients, the predominance of hepatitis appears to suspend dysentery, but the latter disease seemed sometimes to have a tendency to reappear, and, in two fatal cases, it went on increasing in gravity to the end. In cases of abscess, the author states the abscess must be opened externally as soon as the fluctuation is evident.

61. *Cirrhosis*.—The diagnosis of this condition of the liver is thus stated by Dr. Budd. Slight sallowness of the complexion, a dull pain in the right hypochondrium, with occasional feverishness, in a person above 30 years of age, who has long been in the

\* *Lancet*, June 7, 1845.

† *Journal de Médecine*, Aug. and Sept.

habit of drinking spirits to excess, are almost conclusive evidence of the existence of cirrhosis, even before there is any direct proof that the circulation through the liver is impeded. When ascites occurs, the diagnosis is rendered more conclusive. The only diseases likely to be confounded with cirrhosis, after the occurrence of ascites, are chronic peritonitis and malignant disease of the liver. The former is distinguished by the presence of hectic symptoms, which are not usual concomitants of cirrhosis; the fluid moreover is seldom so abundant in peritonitis, nor is it so persistent: the history of the individual likewise assists in the diagnosis. In cancer of the liver the dropsy is seldom so extensive as in cirrhosis; the liver moreover grows gradually larger, and may eventually be felt below the ribs. In cirrhosis the contrary takes place. In cancer there is usually hectic and sweating. In cirrhosis the skin is dry and rough.

In the treatment of cirrhosis Dr. Budd agrees with Dr. Corrigan\* in the propriety of the local abstraction of blood, but cautions us against the too free use of the remedy. Mercury and iodide of potassium are necessary adjuncts, the former carried to slight salivation. After ascites has supervened, the author remarks that much harm may be done by depletory measures, courses of mercury, &c., and recommends warm baths, mild diuretics, and careful attention to diet.

62. *Jaundice*.—A fatal form of jaundice is described by Dr. Budd, which does not appear to be of general occurrence. It appears to depend upon a serious disorganization of the hepatic cells, independent of inflammation, and giving rise to a softened condition of the organ. Several cases are recorded by the author, the course of which was as follows. The jaundice supervenes somewhat suddenly, the color of the skin being intensely yellow. There is little or no fever, nor tenderness of the abdomen, and the pulse is not usually above 70 or 80. Soon, however, symptoms of poisoned blood begin to show themselves, the stomach becomes excessively irritable, delirium sets in, and the patient eventually dies comatose, with or without convulsion. A remarkable peculiarity in this form of jaundice, mentioned by Dr. Budd, and which we have ourselves witnessed, is its tendency to attack several members of the same family. Medical treatment has but little influence over this fatal disease; the cases which recover appear to do so from a spontaneous subsidence of the destructive cellular action, whatever it may be, rather than from any tangible advantage from medicinal means.

M. Decaisne† seeks to demonstrate that icterus does not always depend upon biliary derangement; but that there is one form of the disease in which the discoloration of the skin is produced by some change in the constitution of the blood, and is altogether unconnected with a redundancy of bile. It is obvious, however, that the latter affection, which he calls idiopathic icterus, and which consists in a *sallow* alteration in the color of the integument, has no title to be included in the same class with jaundice properly so called; but is merely the result of a cachectic condition of the body in general, in which less blood, or blood of an altered character, circulates in the cutaneous vessels.

It is asserted by M. Loujon‡ that a yellow discoloration of the palate invariably precedes the icteric tinge of the rest of the body. He maintains that by this appearance an attack of general jaundice may be predicted with certainty.

63. *Fatty Liver*.—Professor Schlossberger§ endeavors to give the following explanation of the adipose liver occurring in phthisis:

The frequent combinations of pulmonary phthisis, with fatty infiltration of the liver (from the nutmeg liver to complete fatty degeneration), indicate a physiological connection between the liver and lungs. Antagonism is certainly shown between these two organs, inasmuch as both excrete carbon and hydrogen from the organism, though by opposite means, and an increased function of either organ generally causes diminished function in the other. It is, therefore, perfectly reasonable to assume an increased hepatic function during the tubercular disorganization of the lungs, and the adipose degeneration of the liver forms a good confirmation of that conclusion. It is only to be regretted that the well-formed deduction shows some deficiencies, if subject to closer examination. For it is not only unproved that a diminished absorption of oxygen, or exhalation of carbonic acid and water, takes place in pulmonary phthisis; but, on the contrary, many consider the proximate cause of phthisis an increased absorption of oxygen. Even Andral's theory suffers from the inexcusable fault of considering the

\* Half-yearly Abstract, &c. Vol. i., p. 56.

† Gazette Médicale, Mai 17, 1845.

‡ Gazette Méd., No. 17, and Encyclopédie des Sciences Médicales, Mai.

§ Archiv. für Physiol., and Med. Times, Oct. 18, 1845.

fatty infiltration of an organ as the consequence of an increased function; whilst, on the contrary, excessive accumulation of fat not only causes a retrocession of the vascular substance, but also the real or potential destruction of numerous parenchymatous cells, and thus it certainly rather induces a diminution than an increase of the specific function of freeing the organs from carbon and hydrogen. If we compare the daily increasing prevention of biliary secretion from the blood, with the complement by the added deposition of fat into the cellular interstices, we cannot retain our doubt whether this complement equals in quantity the amount of diminished biliary secretion. The former theory, already shaken by the above, is perfectly refuted, through the proved assertion of Rokitansky, viz., that adipose liver not only belongs to pulmonary tuberculosis, but essentially to tubercular dyscrasy in general, whether it may be located in the lungs, the intestines, the lymphatic glands, bones, or other organs. Instead of that disproved theory, a probable explanation of the frequently combined pulmonary phthisis might be given thus: *that considerable tubercular depositions, being albuminous or fibrinous exudations, produce a diminution of proteins in the blood, consequently the other constituents of the blood, and particularly those of the fat, are caused to preponderate.* The fatty degeneration of the liver would thus be the result of the sanguineous composition, consecutive to the tubercular (albuminous) dyscrasy, and a localization of the dyscrasy in that organ, which is no doubt immediately connected with the formation and consumption of fat. That such depositions of fat correspond to a distinct composition of the blood (adipose dyscrasy), is also confirmed by the acute fatty infiltration of the liver, observed by Rokitansky, appearing with inflammatory symptoms. As in real inflammations, the blood contains an abnormal amount of fibrin, which is deposited by an operation of nature: so in these fatty infiltrations, the local accumulation of fat is the consequence of an excessive proportion of fatty matters in the blood.

The explanation of the fatty liver of phthisis, derived from the antagonism of the lungs and liver, is shown by Dr. Budd to be untenable, for, as he observes, in organic diseases of the heart, and in asthma, where the office of the lungs is not unfrequently as much interfered with as in phthisis, the liver does not become fatty. Still further refutation is also afforded by the fact noticed by Rokitansky, that fatty degeneration of the liver is found in conjunction with tuberculous disease of other organs; as the mesentery for instance, where there are no tubercles in the lungs. The theory favored by Dr. Budd is that the fatty accumulation is in some manner connected with the hectic and wasting of phthisis, in which the fatty matters distributed throughout the body generally are reabsorbed into the blood, and become entangled in the hepatic cells, in consequence of the large size of the oil globules. This question, however, is, he admits, far from distinctly cleared up.

64. *Diseases of the Pancreas.*—In "Casper's Wochenschrift," No. 17, Dr. Melion, of Freudensthal, has published an essay, with the object of giving more precision to the diagnosis of pancreatic diseases. Four cases are recorded, in two of which he was able to verify his observations by *post-mortem* examinations. The symptoms were pain in the epigastric region, vomiting of albuminous fluids, constipation alternating with diarrhœa, fixed pains in the loins and shoulders, rapid emaciation, and great mental depression. In the first fatal case, the pancreas was found adherent both to the liver and stomach, and was of a cartilaginous hardness; in the second, the organ contained a cavity in its centre, filled with an ichorous fluid. [It is to be feared that in the catalogue of symptoms above mentioned, there is none which can be considered as in the slightest degree aiding the author's object. Dr. Dick (Medical Gazette, October, 1845) is, beyond doubt, correct in the statement that there is no single symptom strictly indicative of pancreatic disease, and that no system of treatment, therefore, can be laid down.] M. Cenic\* has noticed the connection between pancreatic disease and spermatorrhœa.

#### § V.—*Diseases of the Genito-Urinary System.*

65. *Hæmaturia.*—An affection analogous to that which occasionally prevails epidemically in the Mauritius has likewise been met with in Brazil by M. Sigaud.† It

\* Il Raccoglitore Medico, and Gazette Médicale, Sept. 28, 1845.

† Du Climat et des Maladies de Brazil, &c., 1845.

consists in the discharge of bloody urine, and is most frequently observed in females. The author admits two varieties of the disease; one of an active or sthenic type, in which the urine is distinctly sanguineous; the other passive, in which that fluid resembles the chylous, or milky urine of authors. The disease does not appear to be incompatible with the enjoyment of health, and is referred by the author, as well as by MM. Rayer and Orfila, to an imperfect sanguification of the chyle. The best treatment is found to be generous diet, with a combination of iron and quinine.

66. *Morbus Brightii*.—A case of this disease has lately been recorded, which assumes a high degree of interest, in consequence of the symptoms having given rise to a suspicion of narcotic poisoning. It is as follows:—A man who was known to have been laboring under diarrhoea, went to a druggist, and obtained a draught containing laudanum, in order to tranquillize the bowels. He was shortly after seized with stupor, laborious and occasionally stertorous breathing, sluggish pupils, and oppressed pulse. He was treated for narcotic poisoning, but without effect. After death no lesion of the brain could be discovered, neither was any trace of opium to be found in the stomach; but the kidneys were in an advanced stage of granulation, and nitrate of urea was clearly ascertained to exist in the brain. Some very apposite remarks are appended to the case, contrasting the symptoms with those of undoubted poisoning by laudanum, by which it will be seen that, although the supposition was warranted by the history, there were many discrepancies in the symptoms.\*

67. *Alkaline Urine*.—Dr. Krukenberg† calls attention to the fact, that the urine is often rendered alkaline by eating fruit, and warns us to take this into consideration in forming a diagnosis in all diseases in which alkaline urine is liable to occur, as in simple chronic nephritis, and spinal disease.

#### § VI.—Diseases of uncertain or variable seat.

68. *Gout*.—Dr. Robertson, of Buxton, has recently published a work upon this subject, which may be advantageously consulted as a book of reference by those who are frequently engaged in the treatment of the disease. It is many years since an extended work upon gout has made its appearance, and it would seem, from this fact alone, either to have become a less common disease, or that the principles of its treatment are so well established, as not to require further elucidation. It will, however, be made obvious, by a perusal of Dr. Robertson's volume, that the light which the progress of animal chemistry has thrown upon this in common with many other diseases, has made it requisite to be considered under new aspects. Dr. Robertson appears to be thoroughly imbued with the importance of the chemico-pathological doctrines of the Giessen school, and has not failed to give them a prominent and at the same time not exaggerated position in his chapter on the history and nature of the disease. The chapter on treatment is very complete, and bears evidence of being the production of a man of unusually extensive experience in the management of gouty affections.

69. *Scrofula*.—M. Sandrat, in consideration of the great expense attending the exhibition of iodine in scrofula, more especially in charitable institutions, has endeavored to find a substitute in the extract of walnut leaves, first recommended by Negrier. His experiments with this medicine appear to be to a certain extent satisfactory; but it must be allowed that the exact value of any remedy is difficult to be ascertained, in a disease in which a nutritious diet and pure air are alone able to effect so much. (25.)

70. *Diabetes*.—Some useful hints on the treatment of this unmanageable disease will be found in a former part of the present volume (art. 27), from the pen of Dr. Rees.‡ He particularly objects to the plan of submitting the patient to a diet entirely restricted to animal food, stating that he has seen those cases do best in which there has been a judicious admixture of vegetable food. As medicinal agents, he appears to place the greatest confidence in Dover's powder and magnesia.

A case is related in the "Dublin Medical Press" of Nov. 12, in which the saccharine character of the urine almost entirely disappeared, and the fluid regained its normal specific gravity, under the exhibition of grain doses of the acetate of lead. [There is

\* Med. Gaz., Sept. 27.

† Henle's Zeitschrift, and Medical Times, Aug. 16.

‡ On the Analysis of the Blood and Urine. 2d ed.

room for considerable doubt as to the real influence of the medicine in producing this effect in the above case, as we have sometimes seen all trace of sugar disappear immediately before death, and under various systems of treatment.]

### § VII.—*Diseases of the Skin, &c.*

71. *Porrigio*.—The minute divisions and subdivisions to which the diseases of the skin have been submitted by various systematic writers, have ever been a source of inextricable confusion to the student. Scalp eruptions in particular are open to this objection, and, important as they are, in private practice more especially, their study has, from the artificial complexity of their arrangement, been regarded with distaste or neglect. Much praise is therefore due to Dr. Corrigan, for his attempt to render our knowledge of the porriginous eruptions more precise, and their diagnosis more easy of accomplishment. The true character of porrigo is not that of a pustule, as stated by Bateman and others, but that of a true vegetable production, in the form of a cryptogamic plant, and has been pointed out by Dr. Bennet, of Edinburgh, and M. Gruby. The microscope, therefore, will in all cases settle the question of the porriginous character of a given eruption. Where nothing more than an amorphous mass, resembling the debris of pus-globules and epithelial scales, is to be seen, the case may safely be pronounced to belong to the family of impetigines; where, however, the cryptogamic plant is discovered, no doubt can be entertained of its porriginous nature. Dr. Corrigan does not believe that porrigo is contagious, but, as his opinion is founded upon the assumed failure of inoculation, it is but right to state, that since that opinion was expressed, inoculation has been tried with complete success, both by Dr. Remak, of Berlin, and by Dr. Hughes Bennet. The description of the experiment of the latter gentleman is to be found in a recent number of the "*Northern Journal of Medicine*."\* In the treatment of porrigo Dr. Corrigan is in the habit of using an ointment composed of from five to ten grains of the oxymuriate of mercury to an ounce of lard. (28.)

72. *Lupus*.—The advantage of issues in the treatment of this obstinate disease is spoken of by Dr. Kennedy, who mentions an isolated case, in which this remedy appeared alone to bring a cure, after every other plan of treatment had failed. (30.)

73. *Pellagra*.—The more southern parts of France have within the last few months been visited by an epidemic of this loathsome disease, the ravages of which were so extensive as to demand the investigation of a special commission. A report was accordingly presented to the Académie Royale de Médecine, by MM. Jolly and Gendrin.† The investigations of these observers, as also those of M. Roussel, appear to render it probable that the production of the disease is connected with the cultivation of maize as an article of food, since they have found that the disease prevailed wherever that grain was grown. For example, pellagra appeared in Spain at the close of the sixteenth century, simultaneously with the introduction of maize into the country. In Italy the same connexion is accurately traced by the dates; in short, wherever M. Roussel pushed his inquiries, he has discovered a parallelism between the two facts. A similar opinion had been expressed by Thouvenet‡ as far back as the year 1798. The explanation of the fact appears to be that the disease depends upon deficient alimentation, and that maize contains a less proportion of nitrogenized principles than any other grain.

74. In concluding this section of our Report, we beg to call attention to a small work lately published by Mr. Erasmus Wilson,|| upon the management and maintenance of a healthy state of the skin. Although written in a popular style, and therefore admirably adapted to further the humane attempts of the Legislature in improving the hygienic condition of the population, it contains much information which will prove very acceptable to the medical reader.

\* September, 1845.

† *Traité de Climat de l'Italie*.

‡ Séance 3d, 10 Juin. *Bulletin des Acad.*, Août, 1845.

|| *Practical Treatise on Healthy Skin, &c.*

## II.

# REPORT ON THE PROGRESS OF SURGERY.

BY HENRY ANCELL, ESQ., M.R.C.S.

THE surgical extracts of the present volume, with the following Report, will be found to contain more of the *ARS CHIRURGICÆ* than of that which properly belongs to surgery as a science; but we believe that, in this respect, it faithfully represents the labors of surgeons during the preceding half-year. Very few works have reached us on the general subject, or on any of its great divisions treated in full. The translation of Chelius is still in progress; but apart from Mr. South's notes, it chiefly embraces the accepted principles of surgery, which it is not necessary to comprise in this Report. Both the text and the notes must be regarded as important additions to our surgical literature, and we have rendered them useful, by collating with them many of the cases and articles on specific subjects, which have been recorded in the British and Foreign periodicals. Admiring the perfection of the art, which, in the hands of M. Jobert, can restore health and comfort to a fellow-being apparently doomed to an existence of nearly unendurable misery, an instance of which will be found in the present volume, still correct principles most especially deserve to be consecrated; and in the abundance of surgical literature which must necessarily pass in review, our selections will always be made with especial regard to this truth. The practical application of sound principles in the treatment of inflammation and its consequences—ulceration and other lesions—is of far more consequence to the interest of humanity than the most splendid operative achievements. Miller's "*Principles of Surgery*," in which the recent discoveries of physiologists are in many important respects brought to a practical bearing, has led us into this reflection.

We find Professor Miller admitting into his definition of inflammation "a perverted condition of the *blood*," as well as of the blood-vessels of a part, and giving due importance to the fact, that the fibrin of the blood is increased not only in quantity, but also in plasticity, and in the tendency to become organized. So far as the heat of inflammation is actual, this is referred to the blood itself, and many of the effects of inflammation are satisfactorily accounted for by our knowledge of the properties of the liquor sanguinis, of plastic fibrin, and of the blood-corpuscles. A very clear view is also taken of the ulcerative process, of suppurative abscess, and gangrene. The symptoms of inflammation, as also the effects of remedies in the management of the inflammatory process, and of its sequelæ, and the subjects of irritation and shock, are explained on the principles which precede. Miller's work, like that of Chelius, will be rendered most available by us in the manner indicated; but we regard it as another important addition to our surgical literature, and shall no doubt have occasion to refer to it as an authority in many of our future volumes. In collating the various novelties in surgical science, and placing them before our readers, we must not be understood as pledging ourselves to the belief that they are all improvements; and it will be perceived, that while we record every important suggestion from foreign sources, and are anxious to do justice to the advancement of learning and to the efforts of genius wherever derived, we are not disposed to allow opportunities to pass of vindicating the claims of British Surgery.

### § I.—*Surgery of the Head and Neck.*

1. *Fractures and Injuries.*—In addition to the extracts in the present volume (53, 83), numerous cases are recorded in the periodical press. For the most part they present nothing new; but they illustrate received doctrines, have been treated according to the usual methods, and followed by the ordinary results. Amongst the most



interesting is a case by Mr. C. S. E. Ford, of the Madras Medical Establishment,\* of gunshot wound of the brain, with extensive fracture of the cranium, followed by complete recovery, which may serve well as an additional exemplification of the vast amount of injury the head may suffer without fatal results. The os frontis was greatly comminuted, the right orbit depressed, and a fracture extended from the os frontis, upwards and backwards, to the lambdoidal suture; cerebral inflammation supervened, and during the treatment, pieces of brain passed from the wounds caused by the bullet. The patient was in the first instance treated antiphlogistically, and then supported. Both mind and body were perfectly restored. This case corresponds with one which not long since came under our own care. A boy fell thirty feet, and met with a commuted depressed fracture of the os frontis. Several portions of bone were removed, and brain escaped for many days; he was treated antiphlogistically, and kept for some time at what might be termed the point of acute starvation; he recovered perfectly, and his intellects were unimpaired.

2. *Resection of a carious portion of the left Parietal Bone.*—The following case, selected for a clinical lecture by Professor Heyfelder, of Erlangen, deserves notice.† A woman, aged 36 years, suffered for a long time with pain in the left side of the head, and deafness. A tumor presented at the part, which being opened, gave rise to an ulcer, at the bottom of which the bone was ascertained to be carious. M. Heyfelder separated a portion of the parietal bone, 15 lines long and 13 wide, which was carious throughout; the dura mater having a granulated surface. The wound healed, and the woman was cured of her headache and deafness.

3. *Excision of the Inferior Maxilla.*—As an example of successful operative surgery, M. Blandin brought before the Royal Academy a woman from whom he had removed the whole of the left side and a portion of the body, to the level of the commissure of the lips on the opposite side of the inferior maxilla.‡ The principal branches of the facial nerve had been preserved, and paralysis of the muscles of the face avoided. A ligamentous band occupied the place of the portion of bone removed, and by solidifying, in some measure supplied its functions.

Mr. Rynd, of the Meath Hospital, Dublin, has also performed the operation of excision of the greater part of this bone, for the removal of an osteo-sarcomatous tumor, weighing about a pound and a half.§ He first made a vertical incision over the symphysis, and, instead of including the tumor in two semicircular incisions, as recommended in surgical works, he cut from over the prominence of the joint, for a short distance vertically downwards, and then made a semicircular sweep, to unite the angle of the flap made by the first incision. In order to finish the operation at the joint, instead of cutting through the capsular ligament with scissors, and then using a probe-pointed bistoury, as recommended by M. Malgaigne and others, Mr. Rynd had an instrument constructed resembling the ordinary dressing spatula, being somewhat thicker, blunt at the edges, but with its rounded extremity sharp enough for cutting. This instrument was passed between the bone and the internal pterygoid muscle, the internal maxillary artery and the other structures, on the inner side,—loosening their connexions with the ramus of the jaw. The joint was thus divided from its anterior aspect without any danger of wounding the artery, and the operation in this manner completed.

4. *Hydrocephalus.*—Mr. George Chater, surgeon, of Norwich,¶ records a congenital case of this disease treated by puncturing the walls of the cranium with a grooved needle, having a spear-shaped point, cutting like a common lancet to the shoulder, the diameter of the spear being equal to the circumference of the grooved needle. About four ounces of fluid were at first drawn off. The puncture was repeated after four days, and six and a half ounces evacuated. Four threads were then introduced, to act as a syphon. The case went on favorably for several days, but ultimately the child died comatose.

5. *Facial Abscesses.*—In the "Northern Journal of Medicine," Dr. Adams records a case of abscess behind and below the angle of the lower jaw, occurring after scarlatina, in a child aged 15 months, with which a blood-vessel communicated. The abscess burst into the throat, and the child died of hemorrhage. The case illustrates, in Dr.

\* Monthly Journal of Medical Science, Sept., 1845.

† Archives Générales, July, 1845.

‡ Provincial Medical and Surgical Journal, Oct. 1.

§ Gazette des Hôpitaux, July 19, 1845.

¶ Med. Times, Sept. 13, 1845.

Adams's opinion, the necessity for the early opening of abscesses seated under the resisting fascia of the neck, particularly when they take place in children of weakly constitution, or debilitated by disease.

6. *Indurated Tonsils*.—Dr. Huss, of Stockholm, has employed successfully a method recommended by Professor Brunting. It consists in introducing the index-finger into the throat, and compressing the indurated gland for some minutes, augmenting the pressure gradually, and repeating it several times a day. After some days the tonsil softens, absorption commences, and the surface shrinks; at this time irritating gargles should be employed to promote the contraction of the tissues. This treatment should always be adopted before excision is resorted to; it is most successful in children; but requires to be persevered in for several weeks without interruption.

7. *On the extraction of foreign bodies from the meatus auditorius externus*.\*—Dr. Sims remarks, that the means of extraction recommended in books, in these cases, are often nugatory and inapplicable, and sometimes injurious. He urges the use of the syringe in preference to probes, forceps, hooks, scoops, curettes, and every other instrument, as being the easiest, safest, and quickest method, and applicable in all cases, whether the foreign body be large or small; light or heavy; irregular, even, smooth, or angular; occupying a small space, or plugging up the meatus entirely; of recent introduction or of long standing; or whether it be complicated or not with symptoms of a local or general inflammatory character. He wishes, however, by no means to be understood as objecting to the *forceps* when properly managed, for that instrument is generally the indispensable adjuvant of the syringe. Velpeau relates "the thousand different means that have been proposed" by Archigenes, Celsus, Alexander, Mesue, Hameck, Rhazes, Verduc, Donatus, Fabricius, Paulus, &c., &c.; some of which are certainly sufficiently fanciful and absurd. Yet in all this formidable array of authors, with their equally formidable array of instruments, the syringe is not to be found.

Even modern authors, including Mr. Pilcher, recommend various mechanical contrivances, as "bent levers," "steel stylets," "small, obtuse, flattened, bent probes," "crooked wires," &c.; but they make no mention of the syringe. The difficulty of dislodging foreign bodies from the meatus is admitted by all, and even the syringe may fail; but this can seldom happen where the philosophy of its use is properly understood. Dr. Sims very properly remarks, that whoever follows the loose direction of "syrringing the ear forcibly," will often be deceived, a sufficient explanation of which will be found in the anatomical structure of the organ.

The direction of the meatus ought to be changed, "by laying hold of the lower portion of the anti-helix, and pressing the dorsum of the concha forwards, while we put the whole organ forcibly on the stretch, pulling it outwards, upwards, and backwards; thus making the canal a straight line of uniform diameter, when it will be found comparatively easy to throw an injection to its very bottom."

"If the foreign body be small, the water will dislodge it as it rebounds from the membrane;" if large, plugging up the passage, two or three injections will be certain to change its relative position, so as to allow the next to pass by it, impinge on the *membrana tympani*, and wash it out in its retrograde course; or so far dislodge it as to bring it within reach of the forceps.

The syringe should hold little more than two drachms, should have a long tube of small diameter, and the piston should, of course, be perfectly air-tight. Water thrown from an instrument of this kind, suddenly and forcibly, does not pass in a long, slow, continued stream, but strikes, as it were, at once, and with great power. The stream will often pass, undivided and in full force, past the foreign substance, so that its "reflex action" is almost as strong as its direct force, and this renders it preferable to a large syringe, where the continued stream of a large volume of water, striking in a direct line with greater momentum, counteracts entirely the retrograde force.

Dr. Sims gives several interesting cases of various foreign bodies which have been lodged in the ear, sometimes for a great length of time,—one of which will be found in the Abstract (78).

Another American author, Dr. Bryan,† appears to attach much more importance to the use of instruments. He states that he has been enabled to extract cherry stones and grains of corn with great facility, by means of an instrument used by dentists for

\* American Journal of the Medical Sciences, April, 1845, p. 336.

† The Medical Examiner.

the purpose of cleansing the cavities of decayed teeth, which is to be carefully introduced, and pushed forward, until it reaches the substance, when, keeping the curved edge towards the axis of the meatus, it may be rapidly passed beyond the body, by which the surgeon obtains a complete control over it, and by traction can easily dislodge it from its bed.

8. *Hare-lip*.—In the Bulletin of the Academy of Medicine there is a long article by M. P. Dubois on this subject, and especially on the most suitable period for the operation.\* After mentioning several cases in which this surgeon operated a few days, and even a few hours, after birth, we are informed that the operation was done in the ordinary way, but that the needles employed were extremely fine, and not so long as usual. An unifying bandage was also dispensed with; its presence, by provoking motion in the infant, being rather injurious than useful. Neither the reality nor the degree of pain produced by the operation at this early period of life is disputed by M. Dubois, but it is remarked, that probably there is less consciousness of the pain, and certainly there exists neither the remembrance nor the anticipation of it, and sensation must subside very rapidly, for, in fact, sleep quickly follows the operation. In two cases the patient went to sleep immediately after the application of the last needle and the first turn of the silk. Hemorrhage was very slight, except in one case. In two cases blood was swallowed, without any bad effect. In reply to those who affirm that the softness of the tissues at this early age is an objection, M. Dubois, admitting that the tissues have a remarkable softness, observes that this depends on their extreme vascularity, which is a circumstance in favor of their prompt union; and as to their liability to be cut through, the cases prove that it does not exist. The quickness with which adhesion takes place, is such as to permit the first thread to be changed for one applied looser after twenty-four hours. Suction, either natural or solicited by artificial means, was in no case prevented by the operation, proving that the fears of the adversaries of its early performance are almost without foundation.

It is by no means necessary to keep the patient from food for several days, a measure which can only have the injurious effect of making it cry, besides which starvation is with difficulty supported by these young subjects. Sleep, remarks M. P. Dubois, is nearly the habitual state in the first days of life, and is scarcely interrupted, except to satisfy the wants of nature, and the operation scarcely at all altered this happy condition, so favorable to the results. M. Dubois affirms that the traces of the operation are less apparent and less persistent than when performed later in life, and that the objection of Dupuytren, in his "*Leçons Orales*," that the chances of mortality, so great in infantile life, are increased by it, is invalid. In none of the instances given was there any considerable disturbance of health. But the chances of mortality are perhaps greater in infants affected with this deformity, which is frequently complicated with other obvious imperfections, and perhaps with concealed derangements which may be incompatible with life. The operation will not increase the fatal consequences of the latter affections, but in anticipation of their existence, M. Dubois makes the reservation that it would be prudent to abstain from operating during the first days of existence in very delicate infants, and in those prematurely born; and also to defer it in seasons when epidemic affections, and particularly erysipelas, prevail.

M. Roux admitted that his opinions on this subject have undergone a considerable change, in spite of himself, during the last twelve or fifteen years, but he could not regard the operation in so trivial a point of view as would appear from M. Dubois' observations. In one instance, an infant operated upon by him, under similar circumstances, died of hemorrhage, but he admitted the fault might have been his own. In another case it did not enter into his mind to put the patient to the breast,—the infant would take no other nourishment, and died.

In support of M. Dubois' views M. Malgaigne has published a case of hare-lip, complicated with extensive division of the maxillary bone, operated upon nine hours after birth, and resulting in perfect union.† M. Malgaigne considers that the reasons advanced for operating early in simple cases are much stronger in its favor for those which are complicated. In the case in question the operation was performed with the greatest ease, the immediate effect was beautiful, the enormous breach in the bone was seen almost daily to contract, and its complete success was certain, although the child died thirty days afterwards, from causes totally unconnected with the operation.

\* *Annales de la Chirurgie*, Juin, 1845.

† *Journal de Chirurgie*, July, 1845.

In an article in the "*Gazette des Hôpitaux*,"\* it is remarked that, although in uncomplicated cases no great advantage can be got by operating immediately (the day of birth or the day afterwards),—when complicated with a division of the palatine arch and of the velum palati, with separation of the bones, the difficulty of suction and the obstacles to effective nutrition, are so many reasons for its immediate performance. The age of the patient gives many advantages to the healing process, and no sooner is the operation performed than the space formed by the separation of the bones begins to diminish. Whereas, on the other hand, there is not one contra-indication. It is true that crying and suction tend to separate the cicatrix, but this accident forms a rare exception, and the inconvenience of these accidents has been greatly exaggerated.

It is here stated, that infants immediately after birth will bear abstinence much better than when older. They will even remain pretty comfortable two or three days without sucking, by giving them a little milk and water, and this period is quite sufficient for the cicatrization of the wound; and, moreover, an infant a day or two old cries much less and more feebly than when three or four months or years have elapsed.

In nourishing infants with complicated hare-lip, M. Dubois employs a long sponge fixed to the extremity of the sucking bottle. This sponge is made to reach as far back as the pharynx, and being applied along the cleft, closes it when the mouth is shut in the operation of suction.†

To prevent the notch or loss of substance, which is so frequently left at the inferior part of the cicatrix after the usual operation, M. Malgaigne‡ adopts a very simple process. Instead of refreshing the edges from below upwards, he incises them from above downwards, leaving the thread detached from the bleeding edge, adhering by a small pedicle. The incisions made, he unites the wound with needles as in the ordinary process, then, by bringing the two little threads over the inferior angle of each labial edge, he can cut and trim them at his pleasure, and fill up the depression alluded to; he can also, when the division is situated in the median line, reconstitute the central lobule of the upper lip. M. Malgaigne has been completely successful in numerous cases, and M. Guersent has operated four times. The operation was of longer duration, but he regards this as a trifling disadvantage, completely counterbalanced by the perfection of the results.

In this operation M. Malgaigne also takes the following precaution. He passes the needles, not through two thirds or three quarters of the thickness of the lips, but through the whole thickness, which does not constitute the slightest obstacle to the exact apposition of the living surfaces. He was led to this by considering attentively the position and motions of the tongue. Owing to the separation of the bones, its tip is brought directly against the posterior surface of the labial division, and in the instinctive motions of suction would strike the wound on projecting forwards, and lick it on being drawn backwards. The two needles form a sort of partition behind the wound, which they protect from the tongue. M. Malgaigne is convinced that this precaution contributes greatly to the solidity of the union.

In simple cases, no bandage whatever is employed, in others a narrow bandage only, the middle placed behind and towards the top of the head over the child's cap, and the two ends brought forward, passing obliquely over the jaws, and crossing on the superior lip under the nose.

9. *Tracheotomy in Croup*.—Professor Trousseau§ has written a valuable paper on this subject. He regards the operation as not dangerous, and the ill success which has attended its performance in laryngitis and croup, as arising from its delay until the phenomena of asphyxia set in. In 121 cases, M. Trousseau had but one fatal accident during the operation. An adult died the instant an incision was made in the skin. In 150 operations, 39 children have been saved. M. Trousseau always operates very slowly, and never makes a stroke with the knife without being directed by the finger and the eye. He is thus certain of avoiding the left carotid, if given off from the innominata and crossing the trachea. He has several times had the innominata under the edge of the bistoury, but on bending the incision a little to the left, and separating the tissues with the fingers, the operation has been completed without fear or accident. "Surgeons," M. Trousseau remarks, "who pride themselves upon performing the operation with marvellous rapidity, and plunge

\* May 13, 1845.

† *Gaz. des Hôpitaux*, May 24.

‡ *Médecino-Chirurgical Review*, July, 1845.

§ *Id.*, June 8.

the bistoury boldly into the trachea to divide it from below upwards, as soon as they have finished the incision of the skin, will deplore this imprudent and useless celerity.\* Ill effects have never resulted from blood accidentally introduced into the trachea, when the lips of the wound have been held open, or the canula at once introduced. Topical applications may be introduced in the after-treatment, through the canula, as the injection of warm water in small quantities, to relieve irritation and assist the expulsion of false membranes; or a weak solution of nitrate of silver; or a stronger solution (1 part to 5 of water) may be applied by means of a mop, at first three or four times, and afterwards once daily.

## † II.—*Ophthalmic Surgery.*

10. *Purulent Ophthalmia.*—After describing five cases, three of which were clearly produced by the application of a morbid secretion to the conjunctiva, Mr. Lawrence† remarks, that so long as the cornea retains its transparency the eye is safe. He speaks in favor of a circular excision around the cornea to relieve chemosis, in preference to Mr. Tyrrell's plan of radiated incision. Even mild solutions—two to four grains in the ounce—of nitrate of silver, sometimes bring back the inflammation after it has been decidedly checked by other measures, and as an astringent, a solution of alum is safer and preferable. The great objection to the use of nitrate of silver in substance, is the difficulty of preventing its action on the cornea.

11. *Transplantation of the Cornea.*—The possibility of transplanting the cornea is stated to be a question nearly settled,‡ but there are still several points, the determination of which is of much importance for its success. The first is to ascertain to what extent the new cornea maintains its transparency. M. Plouviez remarks, that during the five or six years he has been engaged in "*keratoplastie*," and has performed a great number of operations of this kind, he has not once obtained a perfectly transparent cornea. In those cases which have succeeded best, the new cornea has always remained more or less opaline. Vision has been more or less established, but always incompletely.

Among the cases reported, there is one of a young woman twenty-three years old, who became blind at three years old, in consequence of the smallpox, and in whose eye, after having separated the opaque cornea, M. Plouviez fixed, by means of four sutures, the cornea of a young dog killed for the purpose. The grafting perfectly succeeded, but the operator had to regret that the ultimate result was not satisfactory. The only benefit obtained, was that the patient could distinguish day from night better than before, although she was still unable to walk alone. According to M. Fleurens, however, we must still not despair of the success of these experiments; M. Feldmann has long been engaged in them, and appears to have arrived at much more satisfactory results, promising complete success. If so, *keratoplastie* will be an important acquisition in this branch of surgery.

12. *Ossification and displacement of the Crystalline Lens.*—A case by Mr. France.‡ The patient met with a blow on the eye twenty years before, and lost his sight from inflammation. The dislocation occurred about four months ago, and appeared to result from the severance of the lens from its natural connexions, in consequence of a structural change, gradually proceeding from the date of the injury. By Dr. Rees's analysis, the lens was composed of carbonate and phosphate of lime and animal matter. The case is interesting, inasmuch as that ossification of the lens is much less frequent than ossification of the capsule.

13. *Cure of Strabismus.—Ligatures on the recti muscles of the Eye.*—Dieffenbach appears to have been the first, in 1842, to apply a ligature to the divided end of the muscle for the purpose of rendering the cure of strabismus by operation more perfect. Mr. Wilde, of St. Mark's Ophthalmic Hospital, has been the first to resort to this method extensively in this country. He has employed it in at least eighteen patients, including cases of both convergent and divergent strabismus. When there is reason to believe that division of the tendon will not rectify the deformity, which circumstance may frequently be determined beforehand, the portion of the muscle attached to the sclerotica should be left longer than usual, by dividing it between the hook and its origin, as far back as can be safely managed. Having curved a small sewing-needle,

\* Med. Gaz., July 11, p. 439.

‡ Guy's Hospital Reports, Oct., 1845.

† Gaz. des Hôpitaux, Aug. 21, 1845.

about No. 7, and armed it with a fine ligature, the end of the muscle attached to the sclerótica has to be seized with a fine-toothed forceps, and the thread passed twice through it, drawing it tight the second time, so as to secure firmly a piece of the divided tendon. By this means a power is attained over the globe, which will carry it in any direction. In fixing the ligature, care should be taken to fasten it by a second coil into the muscle; otherwise, if allowed to play in a loop, it will cut through before the object is effected. The loose end of the ligature is to be attached, by means of adhesive straps, to the middle of the nose, or to the malar bone, so as to draw the globe of the eye in the direction required. The length of time it must remain on varies according to circumstances, but, as a rule, it should never be removed while it continues on the stretch, or, in other words, till the eye has completely righted itself, either by the action of the other muscles, or by the fixed position, "the setting," of the globe in its new aspect. The patient appears to experience but little inconvenience. In some instances the ligatures have been applied to both eyes, and Mr. Wilde suggests that a ligature might be tried without dividing the muscle where strabismus is caused by permanent spasm, or shortening of the internal rectus, or paralysis of the abductor, and also for the purpose of restoring to a straight position those eyes that have become over-divergent after the usual operation.\*

#### § Abdominal Surgery.

14. *Artificial opening into the Stomach.*—Dr. Watson, of the New York Hospital, has proposed this operation in some cases of obstructed deglutition.† He has, in the first place, collected a number of interesting cases, bearing upon the question, whether such an operation is warrantable. Incised and gunshot wounds have often penetrated the stomach without producing fatal results, and the recoveries have been estimated at twenty per cent. Plouquet has collected a vast number of such cases, and they occasionally occurred in the practice of Hennen, Dr. Thompson, and the army and navy surgeons, some of whom are said to have often stitched the stomach. Openings in the stomach, the result of injury, or occurring spontaneously, may give rise to permanent valvular or fistulous communications between the stomach and the external surface of the abdomen, which may exist for years without impairing the digestion, and consistently with good health. Several most interesting cases of this kind are also quoted by Watson. Dr. Beaumont's celebrated patient, Alexis H. Martin, is in point. But Dr. Watson cites, from the German Ephemerides, three cases in which this formidable operation has actually been performed for the removal of sharp instruments from the stomach. A young peasant accidentally swallowed a knife; the surgeons of Königsberg advised its removal from the stomach by incision; Daniel Schwaben, a lithotomist, was selected as operator; the operation was performed about six weeks after the accident. An extensive incision, two inches in length, being made longitudinally, the stomach was found empty, and did not present at the wound; the surgeon seized it, and drew it outward with a curved needle; the projecting point of the knife was easily recognized through the coats of the stomach. An incision was made immediately over the instrument, through which the latter was extracted, and found to be about ten inches long. The edges of the wound required no sutures; no serious symptoms ensued, and the patient got well. A young fellow of Prague swallowed a knife nine inches long, the point of which presented a little above the fundus of the stomach, towards its left side, and the handle towards the spine. Two months afterwards it was successfully extracted. A Prussian woman swallowed a knife seven inches long; it remained in the stomach three days without exciting pain; she then felt pricking sensations, and very soon the point of the knife could be felt in the left side. The pains increased; Dr. Hubner made an incision over the point of the knife in the left hypochondrium, on the eleventh day of the accident; he found that the blade had already pierced through the stomach, and had excited slight suppuration around it. The knife was withdrawn with a pair of forceps, and the cure was very prompt.

Dr. Watson infers that it is warrantable to perform such an operation, as an extreme measure, under pressing circumstances. He remarks that the operation itself is trifling, and requires but little anatomical knowledge. Its immediate danger is hemorrhage; but this is not likely to be severe, unless the stomach were penetrated

\* Dublin Journal, Nov., 1845, p. 211.

† American Jour. of Medical Sciences, January, 1845.

near the upper or lower curvature in the situation of the large blood-vessels. Its more remote danger is peritonitis, which may be avoided by preventing the escape of blood, or of the contents of the stomach into the peritoneal cavity, as well during as after the operation; and by avoiding any injury to the omentum, and all undue manipulation with the serous surfaces. It may also be controlled by depletion, anodynes, and other measures. The stomach being necessarily empty under the circumstances calling for the operation, the liver or the distended colon might present; but these organs can be easily avoided or pushed aside. The ultimate danger of the operation is from impaired action of the stomach. According to a case quoted from M. Richerand, this would be more especially likely to happen if the opening were made into the pyloric portion. Other cases lead to the inference that serious nervous symptoms at the time of the wound would be more likely to occur, if made near the cardiac orifice; the place of election should then be equidistant from the two extremities, and midway between the two curvatures at the anterior prominence.

15. *The surgical treatment of hepatic Abscess.*—In a review of the *Pathologia Indica* of Dr. Webb, this subject has engaged attention.\* A brief account is given of the opinions of authors, from Hippocrates to Van Swieten, on the subject of puncturing these abscesses; also of the first introduction of the use of the trocar in the latter half of the last century, and the more recent recommendation of the *small exploring trocar*. The following case is adduced from Dr. Webb's collection:—

"A middle-aged soldier, who had been fourteen years in India, was received, on the 21st March, 1839, into the hospital, with symptoms of acute hepatitis. On the 23d he had cold shiverings, followed by profuse sweats. On the 30th, Dr. Murray, suspecting the existence of an abscess, introduced a trocar, to the depth of an inch and a half, at the lateral part of the thoracic arch, between the eighth and ninth ribs. *About an ounce of very black blood flowed out by the canula, but without any admixture of pus.* A second puncture was made a little more anteriorly, and deep, under the cartilage of the eighth rib; *this gave exit to more black blood, and afforded great ease, but still no pus flowed.* Tents of lint were introduced into the wounds, and large poultices applied over the side. The symptoms of suppuration continuing, Mr. Wilkins, the regimental surgeon, having (we copy his report) a strong idea that the common trocar had been too short, on the 5th of April introduced the one for puncturing the bladder by the rectum, which, being curved and longer than the other, reached the abscess, and gave vent to a quantity of sanious purulent matter (about four ounces), to the great delight and relief of the patient sufferer. On the 11th, the long trocar was again introduced, as the discharge had stopped; the punctures were kept open by tents; antimonials and hydriodate of potass were administered; the discharge soon became healthy pus, which gradually lessened in quantity, until it finally ceased on the 10th of May, when the wounds became so contracted that the tents would no longer enter, and soon finally closed. The liver resumed nearly its natural size, pressure could be borne without giving pain, the patient's health gradually improved, and he was discharged on the 7th of June; since which time he has been in the performance of all his military duties (now two months), without having required to come back once to the hospital for medicine."

In a second case, several exploratory punctures were made. After the first a little blood only flowed. The new exploratory instrument was then pushed into the liver, behind the middle of the side between the eighth and ninth ribs, when pus flowed—not through the instrument, but by the side of it—apparently from having gone beyond the abscess. The explorer was withdrawn, and a large-sized flat trocar introduced, by which eight or nine ounces of pus were evacuated. The symptoms were relieved for two or three days; another exploratory puncture was made, but after a few days the patient died. On dissection, a large distinct abscess was found in the right side of the concave surface of the gland, which had very narrowly escaped being penetrated in the exploration during life. It contained nearly a pint and a half of thick yellow greenish pus. Immediately above this was the empty contracted sac of the abscess, which had been opened and evacuated; and at the centre of the upper convex part of the liver was a third distinct abscess, the largest of all, containing nearly three pints of matter. Inspector Murray remarks:—†

\* *Medico-Chirurgical Review*, July, 1845. *Pathologia Indica*; or, the *Anatomy of Indian Diseases*, Medical and Surgical, based upon morbid specimens from all parts of India, in the Museum of the Calcutta Medical College. By Allen Webb, B.M.S.

† *Madras Quarterly Medical Journal*, vol. ii., p. 232.

"After having seen this dissection, I would hereafter explore to a greater extent any analogous case; and I am moreover of opinion; that all our punctures should be made from the abdominal cavity, entering the trocar or explorer under the edge of the cartilages of the seventh, eighth, or ninth ribs, as circumstances may indicate. We may often, indeed, get nearer to the abscess through one of the intercostal spaces; and I think primary exploration may sometimes be advantageously made in this situation by a very minute flat canular instrument; but, from not having seen any patient recover where the matter was evacuated in this direction (through the diaphragm); from finding that the action of the fibres of the diaphragm impedes the free discharge of the matter, somewhat like a valve; from observing that the air sometimes enters the wound when made here; and from considering that the opening is not so dependent through the walls of the thorax as when made through the abdominal parietes; I beg to recommend the latter mode in all cases; and I must also say, that I would prefer a long flat trocar to any other instrument, as the stilette can be withdrawn occasionally during the operation, to ascertain if any abscess has been penetrated; and the canula can be left *in situ* afterwards, if thought desirable."

16. *Wounds of the Abdomen*.—Dr. Shearman has recorded the following remarkable instance of abdominal injury,\* highly corroborative of a remark made in the first volume of the "Abstract," p. 231. On Monday night, the 1st February, 1841, James Riley, a powerful little stiff-set man, about 40 years of age, was stabbed in the abdomen with a large pocket-knife. The wound began a little above the internal abdominal ring, on the left side, cut through the whole of the abdominal muscles, was six inches in length, of a crescentic form, and ended a little above the anterior superior spinous process of the left ileum. When Dr. Shearman arrived, the poor fellow had as much of his intestines hanging out as would fill a large wash-hand basin; one of the mesenteric arteries had been wounded, which was bleeding profusely, and the poor man was quite exhausted. The parts were sponged, the artery tied, the bowels returned as well as could be done, a number of stitches put close together through the muscles, and the two edges of the wound united; the abdominal muscles were kept quite relaxed, and adhesive plaster and a bandage applied. He was kept quiet in bed; he had bled so much that some wine and brandy had to be given at first; but as soon as reaction commenced, he was kept strictly under the antiphlogistic regimen. His bowels were moved by injections. He perfectly recovered, and was well enough to go to the York assizes the next month, and give evidence against his assailant.

A fatal case of peritonitis, from the lodgment of a calculus in the appendix vermiformis, is given by Mr. Bury, of Whetstone.†

The two following cases illustrate two different modes of treating the same injury. A boy, aged four years, was received into King's College hospital‡ with a punctured wound of the abdomen, three inches above and to the right of the umbilicus; three inches of omentum protruded from the small opening; there was no bleeding, and little pain. As the reduction would have required much handling, Mr. Dyer immediately cut the omentum off to a level with the abdominal parietes; a small quantity of blood was permitted to flow, and then a compress of lint was applied, kept in place with sticking plaster and a bandage, and the patient got well in a few days without a symptom. M. Hippolite Larrey§ has described a similar case of penetrating wound of the abdomen, with extrusion of the omentum. Moderate efforts at reduction shortly after the wound was inflicted proving of no avail, the protruded part was covered with oiled silk and a poultice, and the case treated antiphlogistically. There was considerable inflammation the first day or two; on the fourth day a healthy suppurating surface was established. By the tenth day it began to retract. A small ulceration formed at the internal angle of the wound. From this time it gradually diminished in size. Nitrate of silver and slight compression were employed. By the thirty-sixth day the tumor was reduced to the level of the skin, and in ten days more the cicatrization was complete. The author remarks that in traumatic omental herniæ, it is not indispensable in all cases to reduce the protruded omentum.

17. *Ovariectomy*.—We have been favored with a published account of a case by Mr. Southam. The age of the patient was 38 years. The abdomen was distended to at least twice the size of the full term of pregnancy; and, from all the symptoms, the case

\* Provincial Medical and Surgical Journal, Aug. 27, 1845.

† Provincial Med. and Surg. Journal, Oct. 1.

‡ *Ib.*, Aug. 20.

§ *Mémoires de l'Acad. Royale de Médecine*, vol. 40, 1845.



was peculiarly favorable for the operation. An exploratory incision midway between the umbilicus and pubis being first made, and the peritoneum opened sufficiently to admit the finger, the presenting cyst was punctured with a full-sized trocar. Sixteen to eighteen pints of fluid having been evacuated, the canula was withdrawn, and the opening enlarged in the usual manner, above and below, to the extent of between six and seven inches; the tumor was withdrawn, and the pedicle, which was attached to the left broad ligament, tied and divided, and the margins of the wound immediately approximated, to prevent the ingress of air. After a brief interval, the wound was again opened, to remove what blood had escaped internally, and to ascertain that the vessels of the broad ligament were firmly secured. The edges of the wound were then closed in the usual manner, the whole carefully dressed and adjusted, and the patient lifted into bed within twenty-five minutes from the commencement of the operation. On the day following, she was bled to fourteen ounces, and antiphlogistic measures, with sedatives, were employed. On the fourth day she felt well enough to sit up; on the fifth the wound was healed, except at the lowest point, all the ligatures being removed; on the fifteenth day she could walk across the room; on the eighteenth day she returned home, a distance of three miles. She gradually improved in every respect; on the forty-ninth day the ligature came away, after which the fistulous opening closed, and the cicatrix of the entire wound does not measure more than four inches.

The tumor was one entire cyst, weighing, with its contents, at least thirty-one pounds. Its structure varied in different parts, being half an inch in thickness near its connection with the broad ligament, and gradually becoming thinner towards the upper portion, "where it appeared scarcely capable of sustaining the weight of the contained fluid, and, in all probability, would have been ruptured by a slight blow."

An instance of ovarian dropsy proving rapidly fatal, by bursting into the peritoneum, is referred to in the Report of the Liverpool Pathological Society.\*

John Dickens, Esq., surgeon to the Salop Infirmary, has also published another case of successful removal of this disease. The subject was an unmarried girl, aged 18. The tumor had for many months been hard, and no fluctuation could be detected. The catamenia were irregular, and the health good, till within a short period of the operation. Ultimately a part of the tumor fluctuated, she also began to lose flesh, and her health to decline, and the inconveniences, from weight and distension, were very great. On tapping, at most not more than a quart of fluid was discharged.\* The patient ultimately measured forty-six inches round the body, and eighteen inches from the ensiform cartilage to the os pubis. The operation was performed on the 22d of August. An exploratory incision of about three inches having indicated that there were no adhesions within reach of the finger, which did not readily give way, the incision was extended downwards towards the os pubis, and upwards towards the ensiform cartilage. All adhesions were easily separated with the finger. This done, and the incision being carried to the fullest justifiable extent, the diseased mass would not even then quit its bed. Mr. Dickens now endeavored to lessen its bulk by means of the trocar, but not more than two pints of fluid escaped, which had no sensible effect in reducing the size of the tumor. The operator's hands were then passed, one on each side of the tumor, deep into the pelvis, and the large firm mass, which at first seemed to be almost distinct from the general swelling above, was raised. The whole tumor was gradually moved forwards, and the abdominal coverings being carefully closed behind it, a double ligature of thin but strong *netting twine* was now passed, by means of a needle, through the pedicle, and then divided. The two halves were separately tied with all the force the operator could exert, and notwithstanding, several vessels, one of which was of considerable size, continued to bleed in one of the portions, after the tumor was detached. Wishing to avoid inclosing the whole of the pedicle in another ligature, all the bleeding vessels were included in one silk ligature, by means of a tenaculum, in the ordinary way. The left ovary was sound. The wound was about fourteen inches long, and was secured with thirteen interrupted sutures. The whole operation did not occupy more than half an hour. The bowels acted for the first time early on the fifth day after the operation; Mr. Dickens having taken care to secure a complete evacuation previously, felt little anxiety on this head. The ligatures on the pedicle came away on the twentieth day, and at the end of three weeks the

\* Edinburgh Medical and Surgical Journal, Oct., 1845.

patient walked about cheerful and happy. The tumor when removed weighed nearly twenty-eight pounds; it consisted, in great part, of a series of cysts; the portion lodged in the pelvis, though cellular, was considerably more solid, containing in parts an oily substance resembling butter, mixed with locks of white hair. Mr. Dickens comments upon the superiority of the large incision, and the impracticability of removing such a mass by any less extent of incision than was practised in this case.\*

The contrast of the above detailed cases, as to their structure and the extent of the respective incisions, is extremely interesting. There are facts before us which lead to the supposition that rupture of the cyst and discharge of its contents into the peritoneum is a more frequent occurrence than at present believed. It will be remarked how readily this might have happened in Mr. Southam's case; and the cure of the disease by tight bandaging and certain plans of rough manipulation may have happened in this way, for although the occurrence is sometimes fatal, as in the case presented to the Liverpool Society, still that it is sometimes followed by rapid absorption of the fluid and coetaneous increased action of the kidneys, ending in a perfect cure, is an unquestionable fact.

Since writing the above, an article in the "*Revue Générale*," on the rupture of ovarian cysts, has come to hand.† Dr. Camus states that in cases which prove rapidly mortal, the fluid extravasated into the peritoneum is usually *pus*. That sometimes an encysted dropsy, after two or three ruptures, is converted into an ascites, although the two affections may coexist. Rupture of a portion of a multilocular cyst, and absorption of the fluid, may repeatedly occur. After repeated ruptures, the patient may be definitively cured, the cyst being converted into a hard body. The circumstances in such cases which correspond with a favorable result, are: 1. The effused fluid being purely serous. 2. The parietes of the cyst being in a healthy or quiescent state. (86.)

18. *Hernia*.—The medical press has numerous cases and observations on this subject during the last half year, and although much of the matter before us is devoid of interest, as containing nothing either new or remarkable; there are other papers, which we propose to condense, to which importance ought to be attached, as tending to confirm generally-admitted principles, or to afford evidence on doubtful points, and otherwise to elucidate this interesting and important subject.

*On the diagnosis of Hernia*.—The circumstance that several surgeons came to the conclusion that a tumor was not a strangulated hernia, in consequence of the absence of all impulse on the patient coughing, has elicited the remark from Mr. C. Hawkins and Mr. Arnott,‡ that an error of diagnosis is occasionally fallen into on this point, and that, in nine cases out of ten, this symptom is absent after strangulation. On the subject of diagnosis also, M. Bérard;§ gives the impossibility of introducing more than a few ounces of fluid into the rectum, as a sign of the sigmoid flexure of the colon being the strangulated part.

Professor Stoltz, of Strasburg,|| describes a case of vagino-labial hernia, with remarks upon the distinction between it and perineal hernia in the female. The broad ligament of the uterus divides the pelvic cavity into an anterior and a posterior part. If an intestinal loop descends before this ligament on the side of the vagina, pushing forward or separating the fibres of the levator ani, it will form a hernia in the labium and nowhere else. If, on the contrary, an intestinal loop descends behind the large ligament, and glides between the vagina and the rectum, it will rise on the side of the perineum near the margin of the anus, constituting a perineal hernia.

In a thesis on Strangulation in Hernia, Mr. Gosselin¶ states that it may occur: 1. By the natural fibrous rings. 2. By accidental fibrous rings. 3. By the neck of the sac. In umbilical hernia, strangulation by the neck of the sac is extremely rare. It is now well established that in crural hernia the strangulation is produced below by an accidental fibrous ring proceeding from the cribriform fascia, and superficially by one of the orifices of the *infundibulum*. Strangulation by the neck of the sac is not very common. Strangulation by the crural ring, although generally admitted, has never been demonstrated; M. Malgaigne and M. Gosselin agree that it is next to impossible.

In inguinal hernia, strangulation by the external inguinal ring is not common; by

\* Provincial Med. and Surg. Journ., Oct. 1, 1845.

† Dublin Med. Press.

‡ Gaz. Méd. de Strasburg.

§ Oct., 1845, p. 229.

¶ Gaz. des Hôpitaux, June 10, 1845.

|| Annales de la Chirurgie, Juin, 1845. Revue Méd., Juin, 1845.

the internal or abdominal orifice is more frequent, by the neck of the sac most common. That strangulation may be produced by the neck of the sac, it is necessary that the hernia shall have existed some time, or at all events that the portion of peritoneum forming the sac, shall have descended for a certain time. Strangulation may be produced by the ring alone when it occurs at the time of the first appearance of the hernia, the neck of the sac being then extensible and ill calculated to produce constriction.

Mr. Gosselin believes that inflammation is more frequently the cause than the consequence of stricture.

It is wrong to imagine that the constipation and vomiting presuppose the obliteration of the calibre of the intestine; the obstacle to the passage of feces has doubtless much to do with it, but peritonitis has also considerable influence. M. Gosselin does not admit spasmodic strangulation.

Among the more rare anatomical lesions with which strangulated hernia may be complicated, are the following: 1. Cysts formed in the external cellular tissue. 2. Masses of fat contained in a pouch, and simulating omentum in a hernial sac. 3. An empty sac adhering closely to the hernial parietes, or a sac distended with serum, which may be so abundant as to constitute a hydrocele of the hernial sac. 4. Ulceration and perforation of the sac, the intestine at the same time being constricted by it. 5. The condition of a strongly-constricted intestine, the parietes of which are thickened, blackish, infiltrated with serum mixed with blood, sometimes with black blood, which, interposed between the membranes, causes them to separate from each other. 6. The alterations which occur at the point of constriction, in the partial or total destruction by ulceration of the intestinal tunics; this ulceration more frequently attacking the internal and middle coat, and less frequently the peritoneal coat. 7. The shrinking of the intestine proceeding from the strangulated portion; this has proceeded even to obliteration.

The persistence of constipation and vomiting where a portion of intestine is pinched up, or the appendix vermiformis or omentum strangulated, can only be referred to peritonitis or to nervous excitement.

Perforation of the intestine may take place on a level with the stricture, or in the body of the hernia; in the last case, which is not the most frequent, it may be the result of partial gangrene, or an effusion of blood, of a small abscess in the intestinal parietes, or an ulceration produced externally or internally by a foreign body.

M. Gosselin gives the diagnostic signs between strangulation and simple inflammation in the hernia. The latter in an old hernia having been allowed to communicate with the peritoneum, may be recognized by the local pain, swelling, and the slight degree of intensity of the abdominal symptoms. But a simple inflammation in a hernial sac without strangulation, which M. Malgaigne believes to be a frequent occurrence, and too often confounded with strangulation, M. Gosselin, leaning to Boyer's opinion, believes to be a rare case, although it may occasionally occur.

Among the ordinary methods of promoting reduction, M. Gosselin prefers leeching to bleeding. He recommends strongly the introduction into the anus of a gum-elastic tube, to discharge the gas contained in the intestines, and states that reduction has been effected by this means in cases where the operation appeared to be imperatively called for.

*Treatment of Hernia.*—A memoir was addressed to the Royal Academy of Medicine, by M. Moreau-Boutard,\* on the taxis combined with continued irrigation and the cold douche, for the reduction of strangulated hernia. Three successful cases are described after the taxis alone, and with the warm bath, had failed. The patient is placed naked on an inclined plane, and a continued stream of cold water made to play upon the hernia. The cold acts not only on the muscular fibres, and consequently as a dilator of the natural or artificial aponeurotic or muscular openings, and on the hernial tumor itself, diminishing its volume by its effect on the capillaries, and exciting the peristaltic motions of the intestinal folds, the gases contained in which are condensed, —but it also occasions a powerful contraction of the cremaster and dartos muscles; and this contraction brought into play, may be perhaps the most methodical mode of applying the taxis. The cold water produces general chills, with contraction of the

\* Journal de Chirurgie, June, 1845.

abdominal muscles, and in from five to fifteen minutes, in the above cases, the hernia escaped from the hands of the operator.

Mr. Phillips records a case of strangulated inguinal hernia, illustrating the necessity for acting upon the *history*, even when the signs are not well marked. All that was apparent, was some fullness of the inguinal canal, but there were symptoms of strangulation to justify operation. The finger could be easily passed into the inguinal canal, and when the patient coughed, a most distinct impulse was communicated, which, as shown under the head "diagnosis," militated against the fullness being constituted by a strangulated hernia; still, on cutting through the aponeurosis of the external abdominal muscle, a large tumor of the size of a hen's egg, immediately presented to view. The sac was very loose, as it was shrivelled up in folds around the gut, and it could be extended as much as half an inch downwards, showing that the intestine had been lower, and that when it retreated, the sac did not follow, nor had it become obliterated.\*

*Prognosis.*—Professor Colles† remarks that he has never seen a case of *inguinal* hernia recover, when gangrene had taken place, yet it is very remarkable, that patients with mortified strangulated *femoral* hernia will often recover, although the parts which constrict the intestines are much more rigid and unyielding, have sharper edges, and form a smaller aperture in the latter than in the former.

*Reduction without opening the Sac. Attempts at subcutaneous Incision. Radical cure by the formation of a natural Pad.*—Dr. Warren, Professor of Anatomy and Operative Surgery of Boston, U. S., has published a series of cases, with remarks, principally intended to enforce the necessity of an early resort to the operation, his usual practice being to wait only about twenty-four hours. The cases embrace some interesting points. In an inguinal hernia, the tendon of the external oblique muscle having been exposed, and a small puncture made in the fascia below the ring, the point of a director was passed into this passage, the ring dilated without opening the sac, and the contents of the tumor returned. In a strangulated crural hernia the posterior and inferior edge of the oblique muscle was divided, and the operator remarks, that the stricture was relieved in this way instead of dividing Gimbernaut's ligament, because it was at once perceived distinctly at the anterior part of the neck of the sac. In one case an attempt was made to relieve the stricture by a "subcutaneous operation:"—A director being passed through a small incision in the skin a little below the abdominal ring, an effort was made to insinuate it from below upwards through the fascia into the ring; but as it was perceived in the use of the knife afterwards, that assistance could neither be derived from the touch nor the sight, the plan was relinquished in favor of the ordinary method, the stricture being dilated by a small incision, and the hernia reduced without opening the sac. Dr. Warren states that subcutaneous section has been successfully performed, and an attempt was made by himself in another case, but relinquished in consequence of the extreme sensibility of the parts. He considers that the risk of puncturing the hernial contents, and of returning a gangrenous intestine, would counterbalance any advantages that might be derived from this method. In a case of inguinal hernia, wishing to do something to prevent the return of the intestine, an inch of integument on each side of the wound directly over the crural arch was included in the suture, instead of sewing the edges of the skin together. The object was to "shorten" the skin at that point two inches, and to gather it up over the abdominal ring; two such sutures being required at a distance of a little more than an inch from each other, forming a natural pad, which, by compression, might be made to adhere to the aperture of the ring, and be sufficient to prevent the subsequent descent of the hernia. When the patient left the hospital he had neither truss nor bandage, nor was there any appearance of the protrusion of the intestine. In another case, which shall be the last quoted from this paper, a man died without operation four days after the strangulation of a scrotal hernia; on dissection, the mouth of the sac at the inner ring was found to be between one and two inches in diameter, the finger could be readily introduced by the side of the intestine, and there was no stricture whatever at the mouth of the sac; the actual seat of the constriction was the tendon of the external oblique muscle at the abdominal ring, and this hernia might probably have been reduced without cutting into the hernial sac. According

\* Med. Gaz., Sept. 5, 1845.

† Med. Gaz., Aug. 1, 1845, p. 500.

to Dr. Warren's experience, in most cases of inguinal hernia the strangulation was at the external abdominal ring, and the plan of dividing the stricture here without interfering with the hernial sac is frequently available. He ridicules the proposal to remove the stricture by dilatation without cutting. His paper is intended to impress upon surgeons the advantages of an early resort to the operation, a principle more frequently acknowledged than acted up to, and he affirms that in his own practice it is a rare occurrence to lose a patient if called in the first period of the attack. The force of this last statement will be admitted on reference to a table published not long since by Mr. Inman, of Liverpool, showing the mortality attending the operation in various hospitals and under different surgeons of the first eminence. Out of 545 cases 260 died, or nearly 50 per cent.\* Of 34 cases operated upon in St. George's Hospital in 1842-43, 9 died, the maximum period of strangulation being seven days, the minimum three hours, and the usual practice being to operate early.†

Dr. Warren, it appears, is favorable to the practice of reducing hernie without opening the sac, but a portion of intestine may be strangulated by the omentum forming a complete bag or sac, including a portion of the intestine, in which case the latter might be returned into the abdomen still strangulated, and a fatal issue would be the result. It appears that of the 34 cases operated upon in St. George's Hospital, in 1842-43, although an attempt was sometimes made to reduce the hernia without opening the sac, this always proved unsuccessful.‡ The same point is illustrated in the following case :

Mr. Long was requested, on the 10th of May, to see a male child six weeks old. He found a scrotal hernia on the right side, the size of a hen's egg, with symptoms of strangulation. The bulk of the tumor, after a little trouble, was reduced, but a portion, the thickness of the little finger, occupying the inguinal canal, and having the testicle at the bottom, remained ; this was exceedingly tender to the touch, and could not be returned by any justifiable effort. The warm bath, cold applications, enemata, and the forced injection of warm water through a long tube, failed to procure either a motion or the evacuation of flatus, or the return of the intestine. On the following day tympanitis and tenderness of the abdomen commenced, and the operation was performed in the usual way.

Mr. Long intended, after dividing the stricture, to return the intestine without opening the sac, but found it impossible. The sac contained a knuckle of intestine of a light port-wine color, in contact with and adherent to the testicle, by a band of coagulable lymph, which was easily torn through. The stricture being divided, the crying of the child forced down several folds of intestine, the color of which strongly contrasted with that of the strangulated portion, and the indented line of demarcation caused by the stricture, formed a distinct boundary between the two. The most difficult part of the operation was to reduce the intestine, the forcing efforts and crying of the child being insurmountable until the occurrence of fainting. Two motions followed during the night, the first exceedingly fetid ; on the evening of the 13th the sutures were removed, and on the 17th the child was quite well.

*Strangulation of the Cæcum. Perforation. Cure.*—The number of the American journal above quoted contains an account of a case of femoral hernia, operated upon by Dr. Hall,§ by the usual method, on the twelfth day. The patient, a female aged 50, was very feeble ; countenance extremely anxious ; pulse 130 ; hiccup ; stercoraceous vomiting at intervals ; bowels tympanitic ; nothing had passed the bowels for fourteen days. On opening the sac the peritoneum was found much thickened, and adherent to the cellular membrane ; the intestine chocolate-colored, and adhering firmly to the neck of the sac, and so tender that in endeavoring to insinuate a probe through the stricture, it passed into the intestine ; the latter was opened, the stricture divided, and gas and fecal matter escaped ; on the inner side, and beneath the intestine, the appendix vermiformis was observed, indicating "pretty conclusively that the strangulated portion must be the cæcum." The patient rallied soon after the operation, had a discharge by the rectum in about a week, and in another week the natural course of the bowels was fully established, the discharges by the artificial opening having ceased. In the treatment of the case before the operation, large and repeated doses of opium were admi-

\* Report of the Liverpool Pathological Society.

† Hewett on Strangulated Hernia, *Médecine Chirurgicale Transactions*, 1845, p. 292.

‡ Lib. cit.

§ Lib. cit., p. 106.

nistered, and Dr. Hall thinks but for that drug the patient could not have survived till the twelfth day.

*Strangulated Hernia complicated with Lumbrici.*—The same volume contains two interesting cases of strangulated hernia, by Dr. Shipman.\* In a boy, aged 8 years, with a strangulated congenital rupture, the operation having been commenced, by the time the sac was opened, he became perfectly outrageous, but was pacified. About an ounce of liquid was found in the sac, and about four inches of small intestines, highly injected, of a dark purple color, containing feces and gas. The caput coli escaped with the transverse arch of the colon so rapidly as to take the operator by surprise, and this, on examination, was ascertained to be full of lumbrici, which could be distinctly felt through its coats.

*Hernia complicated with encysted Hydrocele of the Cord.* Cure.—A man, 61 years of age, affected with irreducible inguinal hernia, on the 20th of April, 1844, was operated upon on the 30th. On a previous close inspection there seemed to be a slight division in the tumor, as if the sac contained two distinct bodies; but the whole tumor was so tense and tender as to make the diagnosis obscure. The sac was very much thickened, containing nearly a gill of fluid, with omentum, and a small piece of intestine, which latter had formed adhesions to the sac and to the omentum. These were separated, and the intestine, being somewhat dark, returned into the abdomen. The omentum was so much thickened, and so generally adherent, that it was thought best not to separate it. Immediately beneath the inner constriction there was still a large tense tumor, of an oblong oval shape, and the size of a goose-egg, the upper boundary being nearly on a level with the external opening of the inguinal canal, and extending half way to the bottom of the scrotum. This was an encysted hydrocele of the cord, and perhaps half a pint of a light straw-colored fluid, mixed with shreds resembling coagulable lymph, escaped on puncture. All the front of the thickened sac was excised with a view to a radical cure; the patient did well, and six months afterwards there had been no descent of the intestine; the hydrocele was permanently cured, and there was only a very small tumor of the adherent omentum. This writer states that a woman, under his own observation, lived twenty-one days after strangulation; but he urges very strongly the advantages of an early recourse to the operation. A case has been cited of a curious form of internal strangulation, produced by the ileum encircling the sigmoid flexure of the colon in such a manner as to produce the first tie of a knot.†

*Double hernia on the same side, strangulation at the neck of the original Sac.*—In a case operated upon by Mr. James Spence,‡ after opening the sac in the usual manner, dividing some resisting fibres at the ring, and reducing some convolutions of the gut, the intestine seemed to be firmly fixed below, and on opening the sac a little further downwards, a rounded fleshy-looking mass was exposed, evidently adherent to the scrotum by its outer surface. It had a singular appearance, resembling somewhat a portion of large intestine, twisted round the lower part of the loop of the small intestines. Its circumference strangulated the bowel, and so tight was the constriction that a probe-pointed bistoury could not be introduced between its edge and the intestine; and it was resolved, on account of the manifest strangulation of intestine produced, to notch its edges slightly; this was obliged to be done from without inwards. On thus relieving the stricture, the substance surrounding the intestine proved to be a small subdivision of the lower part of the sac, greatly thickened, altered in structure and appearance, separated from the upper portion by a firm narrow neck, and closely adherent to the scrotum below. The bowel was reduced, but the patient died, apparently from great neglect on the part of his nurses.

Mr. Spence remarks that the case differs from those described by authors where the stricture has occurred in the body of the sac, inasmuch as the latter were all cases of congenital herniæ. This difference is important, because the lower part of the sac would have the same appearance as the upper, and thus the continuity of the two would be easily recognized. But in the case described, a great alteration in structure had occurred below the stricture, attributable to the patient having worn a truss many years, which by its continued pressure had caused constriction of the neck of the small sac, where it lay opposite the external ring, and had condensed and altered the struc-

\* P. 109.

† Report of the Liverpool Pathological Society.

‡ Monthly Journal of Medical Science, Aug., 1845.

ture of its surface generally. After a time the use of the truss being discontinued, a larger hernial protrusion took place, not entering into the original sac, owing to the narrowness of its opening. On this particular occasion the bowel passed into the contracted neck of what was the sack of the original hernia.

The principal feature to assist our diagnosis in similar cases is, that although the case presented the appearance of a large scrotal hernia, yet a small "hard lump" could be felt in its lower part, distinct from the rest, and all the contents of the hernia could be returned, except this lump, which the patient stated he had never felt before.

*Inguinal Hernia; double Stricture.*—In a second case, which was coincident with an atrophied testicle, a constriction was found about the middle of the inguinal canal, and a very tight, firm stricture higher up, apparently in the neck of the sac. Both were divided, and the case did well. Several other cases are related, each possessed of some peculiar feature of interest. In two instances bronchitis followed the operation.

*Rupture of the Intestine. Cure.*—In a case of inguinal hernia, reported by C. A. Dalby,\* Esq., Ashby-de-la-Zouch, about the third day after the operation, sickness, with vomiting, supervened, and fecal matter was frequently rejected by the mouth. On the eighth day a rupture of the intestine at the seat of the operation took place, and the alvine contents were passed through the orifice, on which the vomiting and all other unfavorable symptoms ceased. This continued between three and four months, when a natural evacuation took place from the rectum, without the aid of medicine. For six weeks she had motions daily, sometimes from the anus, sometimes from the wound. About a fortnight after this the external wound closed, and in six months the patient recovered.

*Strangulated hernia of the right Ovary.*—M. Neboux has recorded a case of this accident. It constituted an ovoid tumor in the inguinal region, of the size of the thumb, which could be partially but not entirely reduced. The moment the taxis was withdrawn it reassumed its original volume; symptoms of strangulation resisted all the ordinary means, and the operation was resorted to. On opening the sac, which was very thick, fluid escaped, and on extending the opening, the ovary, of a dark red color, verging towards violet, presented in the internal ring. After dividing the stricture and breaking up an adhesion with the nail, reduction was easily effected, and the patient recovered.

The above facts and observations are sufficiently conclusive that the subject of hernia, as treated in our standard works, is by no means complete; and it affords us pleasure to observe a new work announced by Mr. Teale, of the Leeds Infirmary, which we hope to have the advantage of for our next Report.

#### § IV.—Surgery of the Genito-urinary System.

19. *Lithotomy.*—The following is a case of lithotomy in the female without dividing the meatus and anterior portion of the urethra, by Dr. Baker, of the State of New York:†

The patient, aged 49, was placed on the table, and secured in the usual way. A straight grooved staff was introduced through the urethra, and the stone felt with the beak of the instrument. The incision was now commenced by dividing the urethra half an inch posterior to the meatus urinarius with a sharp-pointed bistoury guided by the groove of the staff. The beak or probe-point of the lithotomy knife was introduced through the opening thus made in the urethra into the groove of the staff, and pushed forward along the groove, in a direction obliquely outward and downward, until it penetrated the bladder, and the incision continued until of a sufficient size to admit the forceps. The knife was now withdrawn, and the forceps introduced. A stone about the size of a nutmeg was grasped and withdrawn. The search was resumed, and another stone secured and removed, and so on to the number of ten, varying very little in size. No more stones being found, the bladder was carefully washed out with warm milk and water, and the patient put to bed. She bore the operation well, and expressed herself as being freer from pain than she had been for six months. She could now lie on her back or any other position that was proper. The walls of the

\* Lancet, Aug. 16, 1845.

† Philadelphia Medical Examiner, July, 1845.

† Gaz. Méd. de Paris, Aug. 9, 1845.

neck of the bladder were very much thickened, the result probably of the long continued irritation from the friction of the stones.

The after-treatment consisted in mild diet, gentle laxatives, diluents, and fomentations, and at the end of two days of the introduction of the catheter, which was suffered to remain for two weeks, with the exception of its being occasionally removed for the purpose of cleansing. At the expiration of this time the wound was found to be nearly healed, and the catheter was permanently removed. After the removal of the instrument she was able to retain her urine for two hours or more, and exercise full control over its evacuation. She continued to progress in the most favorable manner so far as the urinary difficulty was concerned. Her digestion, however, continued weak, her nervous system became irritable, her nights restless, her mind despondent and foreboding, and at the end of about three months she detected a white sediment in her urine. This increased her alarms and apprehensions of a return of her former difficulty. She finally voided, with considerable pain, a chrystallized white mass of some fifteen grains' weight, and of irregular form. This consisted of the triple phosphate of magnesia and ammonia, whilst the former calculi consisted mainly of lithic acid. Her present sufferings, together with the deposition in her urine, were attributable to weakness of digestion, and general nervous irritability; opiates, tonics, and exercise, and a more nutritious diet, as soon as her stomach would bear it, were ordered. Under which treatment she soon improved, and the deposition in her urine ceased.

During the presence of a deposit in her urine, she was annoyed with more frequent calls to micturate, yet even then she had full control over the evacuation to retain it and pass it at will. From this time her general health steadily improved, and she was able to retain her urine the ordinary length of time, not being at all troubled with incontinence.

The satisfactory result of this case is attributed to the mode of performing the operation, namely, to leave the meatus and anterior portion of the urethra undivided. Where dilatation of the urethra is practicable, it should undoubtedly be chosen as the simpler method, but even in *this*, incontinence of urine is a frequent consequence. Unfortunately, however, in the majority of cases, especially those of long standing, as in the present, there is so much irritability of the parts as entirely to preclude the success of this operation. The common operation of lithotomy in the female, namely, that of dividing the urethra its entire length, is almost invariably followed by incontinence. Such at least appears to have been the experience of Sir Astley Cooper, both in his own operations and those he witnessed in others. He holds the following language in relation to this operation: "In all the cases of this operation that I have performed or witnessed, the urine has not afterwards been retained, but I would not deny that the patient might recover the retentive power. As the loss of retention is the greatest evil, producing excoriation and a very offensive state, I shall, in any future operation of lithotomy, try what may be effected by employing a suture to bring the divided parts together."

The advantage of leaving the commencement of the urethra uncut, will be apparent to every one; it at least acts the part of Sir A. Cooper's proposed suture, without the risk of its irritating or being torn out, not to speak of the pain and difficulty of application. The only precaution necessary to secure success, in addition to the common position and care, is the continued use of the catheter, to prevent the urine from flowing through the wound. The two extremities of the wound being secured by natural structure, and the wound being kept free from urine by the use of the catheter, there is nothing to prevent its rapidly and permanently healing as in other parts.

Professor Syme\* has also operated by dilatation, and then dividing the ring at the neck of the bladder outwards and downwards to a very small extent, when the textures yielded so as to allow a stone the size of a chestnut to be extracted with the forceps without violence. The patient regained the power of retention in eight days.

M. Segalas† succeeded in breaking up a calculus in a very unfavorable case, where a portion was imbedded in a pouch in the bladder, by breaking off a portion of one of the branches of the *brise-pierre* at its extremity. Professor Malago extracted, from a man aged 18 years, a calculus weighing four ounces, in which metallic mercury was

\* Monthly Journal of Med. Science, Oct., 1845.

† Archives G n rales, Aug., 1845.



detected by several competent chemists; from an early age the man had been subjected to mercurial frictions for the discussion of a lymphatic tumor.\* Two cases of operation with clinical remarks, by Mr. Aston Key,† well illustrate the usual cause of difficulty in seizing the calculus.

20. *Rupture of the Bladder*.—A very interesting case is recorded in the "Medical Gazette," by Mr. Wells, Assistant Surgeon to the Royal Military Hospital, Malta, of rupture of the bladder external to the peritoneal cavity. The patient survived the accident a little more than five days. On post-mortem examination, the peritoneum was found pushed upwards, having left a large cavity filled with urine and coagulated blood; at the bottom of which was the bladder quite contracted, with a rent on its anterior surface, about an inch and a half long, the edges of which were hard and rounded. The whole of the cellular tissue surrounding the bladder, the muscles around the pelvic cavity, and the superficial abdominal muscles, were all softened, gangrenous, and permeated by a urinous fluid. The peritoneum was intensely inflamed, very little serum effused, but the intestines adherent by recent lymph. Mr. Wells remarks, that sixty-four hours elapsed from the period of the accident until severe peritoneal complication ensued; and that the uninjured state of the peritoneum renders it extremely probable, that if, in such an accident, a free exit were afforded to the urine extravasated into the pelvic cellular tissue, a favorable termination might ensue.

21. *Suture of the Perineum*.—M. Roux operates in the following manner: The patient being placed as for lithotomy, the edges of the lips of the laceration are excised, and also the margin of the recto-vaginal partition, the sutures (three in number) are then passed from right to left, the most inferior one first, and the threads are introduced so as to embrace as much as possible of the neighboring healthy structures. The extremities of the threads are then firmly fixed on one side and tied on the other upon the bougies or quills, so as to keep the lips of the wound in close apposition. A catheter is placed in the bladder to prevent the contact of urine with the wound, and to avoid the necessity of introducing the instrument after swelling of the organs has taken place. On the eighth day, the ligatures are removed, and not before one motion, at least, has been brought on by the exhibition of castor oil. Professor Roux has operated sixteen times; twelve patients have been perfectly cured, three have died, and one experienced no benefit. Several of the twelve first have since given birth to children, and the cicatrices have never given way. The professor attributes the almost constant ill success, hitherto, of this operation to the employment of the *twisted* suture.‡

22. *Vesico-vaginal Fistula*.—J. L. Petit shrank before the difficulties of any attempt to cure this disease when there is considerable loss of substance; but since the publication of a memoir by Lallemand, in 1825, the first surgeons in France have made efforts to do so. Among these may be cited Desault, Dupuytren, Mallagodi, Roux, Velpeau, and Vidal, but with very little success. Many have denied that a cure has ever been obtained; nevertheless M. Jobert is said to have performed seven operations of an autoplasmic nature, to which he has applied the term *elytoplasty*, with more or less success. We have given a very interesting case of this disease (Abstract, Art. 67), in which the last-mentioned surgeon, having failed by his usual method, adopted a new one with complete success.

In a report by M. Vidal,§ of a discussion at the Royal College of Medicine, we obtain the particulars of a case operated upon by M. Bérard, by the method of infibulation or obliteration of the vagina. The principle of this method is to abandon the perforation in the bladder, and to unite the vulva, so as to obliterate the vagina, and to form, with its posterior parietes, a new fundus to the bladder. The case was an enormous fistula, in which not only the vesico-vaginal partition, but the posterior part of the urethra, was destroyed. M. Bérard made an elliptical incision round the vagina, behind the nymphæ, from the meatus above to the commissure below. The posterior edge of the incision was taken up with forceps, and the mucous membrane dissected off, two centimetres above and three below. It then formed a diaphragm, adherent by its large circumference, and pierced with an oval opening, presenting an external bleeding surface, and an epithelial surface towards the vagina. A suture (a point passé) was passed round the small circumference, the two ends of the thread being

\* Filastre Sebezio, June, 1845.

† Medical Times, October 18, 1845.

‡ Med. Gaz., Aug., 1845.

§ Annales de la Chirurgie, May, 1865

left pendent in the vulva. Then a catheter (*sonde de Belloc*), introduced by the urethra, was passed through the fistula, and brought out by the small circumference. The two ends of the ligature were fixed upon this, and drawn back by it through the urethra. The catheter was then replaced by an elastic gum bougie, intended to facilitate the flow of urine, and to give attachment to the thread. This was fixed firmly. On drawing the threads the circumference of the diaphragm was drawn, like the mouth of a purse, backwards, presenting the aspect of a hollow cone, which could be tightened so as to close the aperture. The surfaces of the mucous membrane, from which the circular diaphragm was detached, were drawn together and maintained in contact by suture. The obliteration of the vagina was not complete, and the patient died of peritonitis about six weeks after the operation.

Numerous objections to this operation were brought forward. Among the rest, the impossibility of obtaining a complete occlusion of the vagina—the difficulty of the operation—the retention of the menses in early life—the prevention of the performance of the sexual functions—and the danger of peritonitis and purulent absorption. Mr. Bérard remarked, in reply, that a woman with a large and deep vesico-vaginal fistula, the urine flowing without cessation and irritating the vagina and vulva, the buttocks and thighs irritated, the patient exhaling an insupportable odor, the sexual relations prevented, the disgust inspired, her sufferings casting her into despair, urging her to suicide, or leading to inevitable death—the case incurable by all known means,—under these circumstances he retains his favorable opinion of the operation for the obliteration of the vagina. In the case in question, the patient was doing well to the twenty-third day, when an inflammatory attack occurred from cold, and she died seventeen days afterwards. On dissection, the vulva was found nearly obliterated, two small openings only existed, superiorly and inferiorly, the latter communicating with the vagina and the former with the bladder.

M. Ségalas has also published a case of urethroplastic operation,\* in which a raparation of a breach of substance in the urethra was effected, the operation having hitherto failed, in consequence of the contact of the urine with the parts not having been prevented. There was a breach of substance an inch in length, which had existed from childhood.

A recent case of laceration of the bladder, about an inch from the neck, so as to form a vesico-vaginal fistula, cured by healthy granulation, after the application of lunar caustic to the edges of the laceration, keeping a sponge tent in the vagina, a catheter in the bladder, and directing the patient to lie as much as possible on the face, is recorded by G. Reed, Esq., of the Hertford Infirmary.†

23. *Fungus Testis*.—In our first volume (*Art. 81*), Professor Symes's new plan of treating certain cases of fungous testicle by pressure is described, and its rationale, according to the professor's views, given. Dr. James Duncan has related a case treated in this manner.‡ The result of the cases already published, he remarks, removed some of the objections which naturally suggested themselves; but the question whether the gland would regain its functions remained, and could not be satisfactorily determined, unless the patient affected with the disease had been deprived of the other organ. In the case described, one testicle had been diseased at a former period, and no trace of it remained; the disease was well marked in the remaining testicle, and of four months' standing; an elliptical incision was made around the fungus, and extended upwards and downwards; the integuments were raised and brought over the growth, and retained by several stitches. Partial union only, by the first intention, took place; but there was no disposition in the fungus again to protrude, and in less than six weeks the wound was completely cicatrized. According to the man's account, his sexual desires were as strong afterwards as they were two years previous to the existence of the disease in either testicle; and in a communication had with him subsequently, there was reason to believe these powers had been tested.

We have seen extirpation of the testis give way to ligature, and ligature again to the "elliptical incision;" but it is unquestionable that cases of this disease, for which formerly the knife would have been employed, now get well by a milder treatment. A case of very large fungus testis, which had run riot for four months, presenting an appearance approaching malignity, with a very fetid discharge, lately presented itself

\* *Mémoires de l'Acad. Royale de Méd.*, vol. xi., 1845.

† *Northern Journal of Medicine*, June, 1845.

‡ *Lancet*, Oct. 11.

to us. The patient was put under blue pill night and morning, and hydriodate of potash twice a day, and black wash and red precipitate were applied locally. An impression was made in a week, the surface of the large projecting tumor assuming a convoluted form, and in six weeks the disease was nearly cured.

### § V.—*Diseases of the Joints.*

24. M. A. Bonnet, of Lyons, has published a voluminous treatise on the subject of diseases of the joints, which has been very favorably received by a part of the French press,\* but much less so by another part.† It is represented as being the result of five years' assiduous labor, under the most favorable circumstances. The work is limited to organic affections of the joints; and the effects of hygienic and constitutional causes in producing these affections are more completely entered into than in any other work extant. To counteract the effects of such causes great reliance is placed on those general agents which render the individual better able to resist cold, as the employment of baths and hydrotherapeutic measures, for the purpose of re-establishing the functions of the skin, and determining the blood permanently to the external parts. The effects of diathesis are most completely investigated. New views are introduced, arising out of an examination of the anatomy of texture. Fungosities developed in the joints are shown to be formed of fibrine and serosity, and to contain small capillary vessels; plastic lymph, known to pass through successive stages of development—at first inorganic, and composed of fibrine and serum—is soon penetrated with capillary vessels, and then, in a third stage, it becomes cellular, fibrous, or cartilaginous,—in a word, organized. The fungosities referred to are plastic lymph arrived at its second stage. Sometimes local, but more frequently general morbid causes prevent the progress of nature to the further stage, or that of healthy granulation. These fungosities are truly an arrest of development—they are plastic lymph, the organization of which is arrested by an internal cause. In the articulations, as in the serous membranes, the formation of fibrous tissue is the last act of the *nusus formativus*, and whenever we find a fibrous layer on the articular surface of bones deprived of their cartilages, or this tissue constituting membranes, or extending in fasciculi from one articular surface to the other, we may be sure that nature has made a curative effort to complete the evolution of coagulable lymph.—Following the same train of investigation, there are three distinct orders of deposit which form in the joints. In the rheumatic diathesis, the least serious, there is a tendency to secrete organizable products—as effusion of coagulable lymph. In the scrofulous diathesis—that in which fungosities most frequently occur—there is a marked disposition to secrete products which organize incompletely. In the most unfavorable states of constitution, the tubercular, the purulent, the gouty diathesis, the deposits—pus, tubercle, uric acid—are absolutely unorganizable. The author distinguishes several varieties of the scrofulous diathesis.

Placing great reliance upon absolute rest and position in the treatment of diseased joints, M. Bonnet has determined, by repeated clinical observation and experiment on the dead body, for each articulation, what attitude is injurious and what advantageous; he appropriates for each joint those mechanical means which are best calculated to fix it in position, and to facilitate its cure; and his own practice has done much to popularize the employment of his apparatus. Subsequently he resorts to “passive motion,” and gives rules for its judicious employment.

Dr. A. Guepratte has also published a long article on *wounds of the articulations*. It recapitulates the general principles of modern surgery in the diagnosis, prognosis, etiology, and treatment of such injuries.‡

### § VI.—*Dislocations.*

25. A case of *dislocation of the tibia* forwards is described in the First Volume of the “Half-yearly Abstract” (article 92). In the present Volume (article 57), will be found a second case; and Mr. Hamilton has recently recorded a similar accident.‡ Mr. Samuel Cooper states that a dislocation of this bone forwards cannot happen without the greatest difficulty, citing as a rare occurrence, that in 1802, a case was seen

\* *Gaz. Méd.*, Juin, 1845.

† *Annales de la Chirurgie*, Juin, 1845.

‡ *Archives Générales*, Juillet, 1845.

§ *Dublin Journal*, July, 1845.

at Guy's Hospital. Whether this accident occurs more frequently than is commonly believed, or whether the occurrence of three cases within so short a period, is but a remarkable coincidence, the cause in all three was in principle the same; the propulsion of the femur forwards with the weight of the body forcing its condyloid extremity downwards and backwards, while the leg was either fixed, or if in motion, the power acting at the moment when the leg and thigh assumed a right line, the body still being propelled forwards. The symptoms and appearances were similar, and they were all easily reduced. These cases will assist systematic writers in describing the accident.

M. Jacquet\* is reported as holding that the effect is produced by a lever of the first order, the patella being the fulcrum, the ligaments the resistance, and the lower end of the femur, the power. We have stated our dissent from this view, but are inclined to believe with Velpeau, that the leg may be bent forwards to a very considerable extent without the ligaments being ruptured; although sometimes these will give way, when the weight of the body would slip the femur behind the tibia.

26. *A dislocation of the forearm backwards*, produced by a singular cause, is related by Dr. Weber.† In a trial of strength, a young man supported his arm in a state of extension, at a distance from his body. His competitor was to bend the limb, which he failed to do by the gradual exercise of his muscular power, but he struck a blow in the bend of his elbow with his fist, the result of which was a luxation of the forearm backwards, which M. Langenbeck, who saw the case three weeks afterwards, failed to reduce. The editor of the "*Journal de Chirurgie*"‡ is severe on the ineffectual efforts at reduction, and remarks that we are in possession of means of traction which insure better results, quoting cases of incomplete luxation backwards, reduced after the expiration of nearly four months, and a complete luxation reduced on the thirty-seventh day.

27. The reviewer of M. Bonnet's work on Diseases of the Joints,§ remarks that M. Bonnet and M. Malgaigne consider "*la maladie que Hey a décrite sous le nom de luxation des cartilages semi-lunaires*," as an incomplete luxation. If the late Mr. Hey of Leeds is referred to, we are not aware that he so designated the affection referred to. After describing the symptoms, the leg being readily bent or extended by the hands of the surgeon, with at most a degree of uneasiness to the patient, but the patient himself being unable freely to bend, or perfectly to extend the limb in walking, and being compelled "to walk with an invariable and small degree of flexion," that distinguished surgeon states his belief that the complaint may be induced "by any such alteration in the state of the joint as will prevent the condyles of the os femoris from moving truly in the hollow formed by the semilunar cartilages, and articular depressions of the tibia. An unequal tension of the lateral or cross ligaments of the joints, or some slight derangement of the semilunar cartilages, may probably be sufficient to bring on the complaint. When the disorder is the effect of contusion, it is most likely that the lateral ligament on one side of the joint may be rendered somewhat more rigid than usual; and hereby prevent that equable motion of the condyles of the os femoris, which is necessary for walking with firmness." These are Mr. Hey's own words, taken from his chapter on "Internal Derangement of the knee joint." The reviewer, while he acknowledges the high authority of the two surgeons quoted, expresses his doubt as to the possibility of a displacement of the internal condyle of the femur behind the semilunar cartilage.

28. *Reduction of Dislocations*.—Dr. Da Camin|| has thought it necessary to insist anew upon Pott's principle, too little regarded, he believes, by most surgeons; viz., that it is not the bones but the muscles which are the greatest obstacle to reduction. The insertion of the muscles involved, is first to be looked to, and the position given to the luxated member, should be regulated by the sufferings which the extension of the limb occasions. Take for instance, a luxation of the forearm; to reduce it easily it is necessary to elevate the arm to the position by which it makes an obtuse angle with the chest, overcoming the contraction of the tendons of the biceps, and of the brachialis internus forcibly applied on the inferior extremity of the humerus.

Dr. Da Camin has readily succeeded in reducing three inveterate luxations of the humerus by a simple movement, which consists in drawing the humerus backwards

\* *Gaz. des Hôpitaux*, May 1

† Aug 1, 1845.

‡ *Annali Universali di Medicina*, Dec., 1844.

§ *Archiv für Physiologische Heilkunde*.

|| *Archives Générales*, Juillet, 1845.

by its inferior extremity ; in this manner, he brings together on the one hand, the points of insertion of the biceps, while on the other hand, he separates those of the antagonist muscles. One of the cases reduced in this manner had subsisted for forty-nine days, another fifty-three, and the third, 106 days.

Mr. L'Estrange, of Dublin, has described, with a woodcut,\* a new apparatus for permanent and steady extension in dislocations, and Dr. Gilbert, of Pennsylvania, has recommended a plan first resorted to by Dr. Fahnestock, of Pittsburg, of employing, in the absence of pulleys, the power derived from twisted rope, for the purpose of obtaining steady and equable traction. The following is the mode of application :

Place the patient and adjust the extending and counter-extending bands, as if for the pulleys ; then procure a rope, such as is used for suspending clothes to dry, or a bed-cord, tie the ends together, and again double it upon itself ; then pass it through the extending tapes or towel, doubling the whole once more, and fasten the distal end, consisting of four loops of rope, to a window-sill, door-sill, or staple, so that the ropes are drawn moderately tight ; finally, pass a stick through the centre of the doubled rope, dividing the strands equally by it ; then, by revolving the stick, the rope being shortened, extension is produced slowly, steadily, and continuously ; while the surgeon, with his hand upon the part, directs the head of the bone towards its destination, as in cases where the pulleys are used.

29. *Anchylitis*.—From Dr. Pancoast's "Operative Surgery," we learn that Dr. Barton has suggested and performed a new operation for anchylitis of the hip, which it is believed may be found applicable to a similar condition of other joints. It consists in making a crucial incision over the trochanter major seven inches in length, and five broad, dissecting the flaps back, dividing the fascia, detaching the muscular fibres from the upper extremity of the femur, dividing the head across with a saw, and subsequently moving the lower portion from time to time on the upper, for the purpose of preventing solid reunion, and of forming an artificial joint.

#### § VII.—Fractures.

The French press in particular, of the last six months, contains some very interesting matter on fractures, which, however little disposed we may be to admit the validity of all the views embraced, cannot fail to strike the British surgeon, as well deserving his consideration. Certain it is that the principles of treatment in fractures are in many instances still unsettled, and we do not believe that a strict adoption of those which are well ascertained has ever yet been carried out in actual practice.

30. In the first place we have before us some important papers on the oft-discussed subject of *fracture of the neck of the femur*. Mr. Bransby Cooper† follows Sir Astley in firmly maintaining that nature is opposed to the osseous reunion of such an injury, that—1. The low condition of the reparative powers at an advanced period of life.—2. The changes peculiar to the hip-joint from age.—3. The peculiarities of original structure, are inseparable impediments to union. Mr. Cooper explains various alterations in structure, and refers to the absence of those tissues which are connected with the bones, and which perform so important an office in their reparation, particularly in the processes preparatory to ossification, as special obstacles. In the process of reparation of fracture, external to the capsule, the bony union takes place to the very edge of the attachment of the synovial membrane, and no further, a proof that it is ordained by nature that it shall not take place within the capsule. The necks of old femora having lost their powers of generating phosphate of lime is another insuperable obstacle.

With these views, Mr. Cooper maintains that no mode of treatment can lead to bony union, that every kind of apparatus is alike useless, and that it is highly injurious to patients to attempt it. Views similar to this are for the most part acted upon by British surgeons, yet it is admitted that bony union sometimes takes place, and even Sir A. Cooper had satisfied himself of the fact. On the other side of this great question, we find Chelius,‡ a high authority among the Germans, asserting that the reason bony union has hitherto in England been seldom observed, may depend on the very careless treatment of fractures known to be within the capsular ligament ; and that the condi-

\* Dublin Med. Press, July 23, p. 60.

† System of Surgery, translated by South, p. 567.

‡ Guy's Hospital Reports, Oct., 1845.

tion of the head of the bone has nothing to do with it, but rather the difficulty of keeping the fractured ends for a proper time in sufficient contact. Again, we have before us a recent article by a French surgeon, M. Guerin,\* whose views are briefly as follows :—

After remarking that, among the fractures which generally unite by ligamentous tissue is that of the neck of the thigh-bone within the capsule, and that no doubt now exists of the possibility of osseous union in this situation, M. Guerin adopts Bichat's reasoning, that the organization of the femur is nearly the same at its neck as in its body, and records experiments to confirm it, and to prove the vitality of the head of the bone after its separation. Injected fluid was easily made to pass from the ileum through the round ligament to the head of the femur. Many reasons also are given to prove that the vitality of the neck of the femur is sufficient for the formation of callus. Instances are quoted in which, after non-consolidated fractures, the round ligament was found to be extremely vascular, and its vessels greatly dilated. M. Guerin believes that the true cause which prevents osseous union is *the mobility of the fragments*. Neither the inclined plane, Desault's splint, nor any of the methods employed for the cure of these accidents, are sufficient to prevent motion; and if in spite of this mobility, union by fibrous tissues still takes place, it shows a powerful tendency to bony union, since the fragments are continually sliding upon each other,—as much so as when the surgeon attempts to form an artificial joint. It is no argument that this displacement of the fragments has no effect upon the union of fractures without the fibrous capsule, which are mostly oblique, since intracapsular fractures are nearly transverse. Contrary to the prevailing opinion, the author believes that bony union might generally be obtained, by preventing the motions of the pelvis, to effect which M. Bonnet's apparatus is completely effectual.

This apparatus consists in a solid half-cylinder (gouttière) which contains the two posterior thirds of the fractured limb, and the two posterior thirds of the pelvis and abdomen. Its framework is a bar of iron, solid behind, thinner at its sides, which are sufficiently supple to be bent towards or from the axis of the box. This framework is well covered with horsehair; on its sides, above the great trochanter, and on a level with the knees, are bracelets from which cords proceed which pass through a hook at the head of the bed. The patient, placed in this apparatus, which has a large opening on a level with the anus, can easily raise his whole body horizontally above his bed—he has only to draw the cord for this purpose. In every case the body is moved *as a whole*, the vertebral column has no motion on the pelvis, nor the pelvis on the thigh; accordingly, there is no tendency to displace the fragments. To prevent rotation outwards the extremities of the gouttière rise up on each side of the foot to the top of the great toe. Continued extension is made by means of a weight which moves on a pulley fixed to the apparatus. The lateral motions of the trunk are confined by the sides of the apparatus, which reach nearly to the armpits.

We place before our readers these diametrically opposed opinions, and can only say that, with the facilities afforded by our hospital appointments, we shall feel surprised if a serious question of fact, such as this is, cannot be definitely settled by the statistics of experience.

31. *Fractures of the Clavicle*.—M. Guerin's memoir embraces not only the treatment of fractures of the neck of the femur, but also of other fractures which are generally very imperfectly united. His principal object is to prove that if these fractures unite only by the medium of fibrous tissues, or by the formation of an irregular and deformed callus, such a result is produced by a radical error in the treatment. Some deformity almost always follows fracture of the clavicle. The author approves of Desault's principle of using the humerus as a lever, with a pad in the armpit as a fulcrum, for the purpose of pushing the scapula backwards, upwards, and outwards, in order to bring the depressed external extremity upon a level with the internal one of the broken bone. But he states that neither Desault nor any of the surgeons before or since his time have dreamt of one important indication, viz :—“*to prevent the mobility of the internal fragment*.” M. Guerin proves by experiment, that on the motion of the arm on the sound side the ends of the broken bone ride over each other, and particularly that when the arm on the sound side is carried backwards the sternal fragment slides from above downwards. And, also, that when a person with a broken

\* Archives Gén., Juin, 1845.

† Archives Gén., Mai, 1845

clavicle turns his face to the sound side, both arms hanging down, the internal fragment of the bone is carried upward by the contraction of the sterno-mastoideus muscle, and that even when the arm is fixed and bandaged by the ordinary methods a crepitus is produced by these motions. The effect on the internal fragment is greater in proportion as the seat of the fracture approaches the insertion of the above-named muscle. The indications which the surgeon has to fulfil, in order to obtain an exact and regular consolidation, are accordingly three. 1. The scapula should be directed upwards, backwards, and outwards, and fixed with an immovable bandage. 2. The arm on the sound side should be fixed to the chest so as to prevent its motion. 3. The action of the sterno-mastoid muscle should be opposed by keeping the face directed towards the fracture by bandages.

M. Guerin does not dispute the inconveniences which must attend the fulfilment of all these indications, particularly if persisted in for a month. He remarks that experience must decide, but that possibly, owing to the great quantity of callus thrown out, the motion of the head may be allowed after a few days, without injury.

The reviewer of this paper in the "*Gazette Médicale*,"\* admits the correctness of M. Guerin's principles, but thinks they will not be put into practice, since the inconveniences resulting from a badly-united clavicle are not very important. Upon this, however, it may be remarked that the deformity resulting from such an accident is not always regarded so lightly, especially when the subject is a female. The same cause is in operation to prevent the bony union of the patella and olecranon, the superior fragment not being invariably kept in contact with the inferior one by the various means employed.

32. In *Fractures of the Olecranon*, surgeons have been too much occupied with one thing only—the position of the arm and forearm. But the indication of diminishing or preventing the influence of the triceps muscle, in drawing the superior fragment upwards, has either been overlooked or imperfectly accomplished. To effect this M. Guerin recommends three wooden splints, corresponding to each portion of the triceps muscle, to be fixed by means of a starched bandage. The indication might be fulfilled by moistened pasteboard, which, being moulded to the surface, would not compress the osseous projections too forcibly. If wooden splints are used, they need not descend so far as the olecranon. The limb should be extended, and the fragments maintained in contact with the usual bandage. This method has not been put into practice, but the author considers it rational. The action of the triceps is the true obstacle to bony union. A case of fracture of the olecranon, in which M. Blandin kept the forearm in a state of flexion, is recorded.† He considers, in this accident, that ankylosis is most to be dreaded, and that if this should be the result, the best position for the limb is semiflexion. He has tried both flexion and extension, and admits there are circumstances in favor of each plan. The opinion that the former has a greater tendency to prevent bony union is without foundation. M. Blandin makes the curious remark, that a certain degree of separation of the two fragments may present itself at the surface, after the termination of the case, and the union may at the same time be immediate and complete below. The bone may be completely united in the deeper parts. This fact was observed after death, in an individual who a short time previously had fractured the olecranon.

33. The imperfection previously described is met with, according to M. Guerin, in the treatment of *Fractures of the Patella*. In this case, as in that of the olecranon, an X bandage fails to keep the divided fragments in apposition. Boyer placed the leg in a box, to the sides of which straps were fixed, which confined the superior and inferior fragments previously brought into apposition. The box has the advantage of keeping the limb extended, and the straps do not compress the flexor tendons in a troublesome degree, but the triceps maintains its power, and opposes the union of the fragments. By means of a double (érigne) crochet, M. Malgaigne obtains bony union of the patella, whatever may be the position of the fractured parts of the bone. With the double crochets he grapples the tendon and the ligament of the knee-pan, and the two parts are brought together by two steel plates, and fixed by a compressing screw. As perfect union is obtained by this means as in the middle of the long bones. Many practitioners have witnessed the favorable results of the practice. If this plan is not adopted, a bandage may be resorted to for the purpose of compressing the extensor muscles of

\* Aug. 9.

† *Gaz. des Hôpitaux*, July 12, 1845.

the leg, in the same manner as recommended for the arm,—a starched bandage rolled over splints, extending from the top of the thigh to within a short distance of the patella,—aided by extension of the limb and bringing the fragments together.

34. *Fractures of the superior extremities of the Humerus.*—M. Malgaigne\* arranges this accident under three heads: 1. Fracture of the neck of the humerus, or those which occupy the surgical neck of the bone, without the capsular ligament. 2. Fracture of the head of the humerus; intracapsular fracture; occupying the anatomical neck of the bone. 3. Fracture of the great tuberosity. But there is nothing new in this arrangement, as appears to be assumed; Sir Astley Cooper distinguished the surgical neck of the bone, which distinction has been since adopted at Guy's Hospital and elsewhere.

In more than twenty fractures of the neck, M. Malgaigne has witnessed displacement of the fractured ends in two only, and he believes that there is a mistake in the recorded experience, on this point, of the most eminent surgeons,—Moscatti, Ledran, Desault, Botot, Richerand,—displacement being a very rare exception. When displacement occurs, it is not always inwards, but sometimes the lower fragment of the bone projects forwards or backwards, and even outwards. Examples of the whole of these are given.

If displacement even occur to the extent of admitting one fragment to ride over the other, M. Malgaigne asks the question, whether it is true that the weight of the arm is sufficient to prevent any considerable motion? and he quotes J. C. Petit against this doctrine, who remarked, that if a fracture of the humerus is situated about the insertion of the deltoid, the action of this powerful muscle must be sufficient to neutralize the effect of the weight of the arm. An interesting post-mortem examination of an unreduced recent fracture of the humerus is given, in which the two fragments were separated; the riding of the bones took place to the greatest possible extent, shortening the limb about three *centimetres*, and the head was turned in the direction downwards and inwards by the action of the supra-spinalis, and probably other muscles, so as to throw the superior fragment of the bone upwards and outwards, corresponding to the highest possible elevation of the arm, a circumstance M. Malgaigne states hitherto unknown in surgery, explaining the impossibility of reducing the fracture by extension made in the usual direction. It must, however, be a mistake to say that the nature of this displacement was not previously known. We are informed by Mr. Macmurdo, of St. Thomas's, that the late Mr. Tyrrel reduced a fracture of this kind by first raising the arm, and then employing extension, and that by keeping the limb in an elevated position for a sufficient length of time the case did well.

35. *Fractures of the Ulna and Radius.*—M. A. Bidart,† of Arras, affirms that the semi-prone position, usually adopted in the application of splints, and during the consolidation in this fracture, has an unfavorable tendency. In supination the bodies of the radius and ulna are at the greatest possible distance from each other; their parallelism and the interval which separates them are consequently as complete as can be, and the osseous plane of the anterior and posterior faces of the arm as regular as possible. In semi-pronation, on the contrary, the radius, by the action of the pronators, tends to roll upon the ulna at its inferior extremity; the parallelism is in part destroyed, the forearm is twisted upon itself, and the osseous planes to a considerable extent lose their regularity. In supination a bandage may be applied with greater exactitude, and will more completely maintain the muscles in the interosseous space and the bones in their natural position. It appears also, according to M. Bidart, to be equally true, that if, immediately after reduction, the limb is placed in a semi-prone position, the original position of the bandage on the arm will change, the ends of the bone will be brought into the interosseous space, and an unfavorable union must result, ultimately impeding or preventing the rotation of the arm.

Although thousands of fractures of the arm treated in the semi-prone position are succeeded by no unfavorable result, it must be admitted that, after the application of the splints, the limb either assumes a position intermediate between supination and semi-pronation, or the tightness of the bandage must overcome the action of the muscles of the forearm; in which latter case, the limb would retain its supine state, unless moved as a whole by the muscles of the arm and shoulder.

In answer to the objection that supination is an unnatural position, M. Bidart

\* *Journal de Chirurgie*, Sept., 1845.

† *Journal de Chirurgie*, July, 1845.



remarks that it is not the only case in the treatment of fracture in which advantage may be obtained by deviating from the natural position. The application of a compressing bandage during semi-pronation is completely illusory; if we place inflexible splints on the palmar and dorsal faces of the arm, and then bind the limb up tightly, the torsion of the limb disappears, and the inferior part is brought forcibly into a state of supination. The author has for a long time past adopted supination in his practice, both for reduction and during the after treatment, without once having had occasion to regret it; the forearm being fixed horizontally on the lateral part of the trunk, so as to form a right angle with the arm, the direction of which is vertical, the ends of the sling by which it is supported pressing before and behind the chest, and being tied on the shoulder of the opposite side.

36. *Fractures of the Ribs.*—M. Lisfranc\* has introduced what is said to be a modification in the treatment of this accident, the importance of which experience confirms. Pressure exercised on an oval body acts with more force in the direction of the longest diameter; and the transverse is generally greater than the antero-posterior diameter of the thorax. Accordingly, the pressure of a bandage, embracing the whole circumference of the chest, is greatest at the lateral parts, and thus must tend to press the ends of the bone *inwards*, instead of fulfilling the indication of directing them *outwards*. For the latter purpose compresses, about four inches wide, should be placed over the sternum; so graduated, that the antero-posterior not only equals but even exceeds the lateral diameter.

This principle of treatment is undoubtedly correct, and we believe it is admitted by Mr. Samuel Cooper and others; at the same time it is very seldom acted upon in this country, and perhaps in consequence of the omission, the bandages have frequently to be removed altogether, to obviate the pain produced in respiration by the fractured extremity of the bone.

#### § VIII.—Amputations.

37. *Treatment of Amputations.*—M. Roulland has published a work on this subject.† The author arrives at a decided opinion against the practice of keeping patients under amputation on a low diet. He shows that in 1815, the mortality was much less among the Russians who adhered to their inflammatory customs, than among the Germans and French, who were treated by the ordinary rules. 1-7th of the Frenchmen died; 1-11th of the Germans, and only 1 in 26 of the Russians.

The work embraces an investigation of Dr. Guyot's method of incubation (*Abstract*, Vol. i., p. 218), in the treatment of the stump after amputation. This consists in keeping it at a temperature of 36°. Twelve cases are given; of 5 amputations of the thigh, 4 were cured; of 6 amputations of the leg, 5 were cured; and 1 humero-cubital amputation was cured. M. Roulland considers that these facts should direct the serious attention of surgeons to M. Guyot's proposal.

38. *Amputation in spreading Gangrene.*—In a paper by Mr. Edward Parker, we are reminded that to Larrey the merit is due, of distinguishing the particular cases of this class, to which amputation is applicable.‡ Mr. Parker gives an instance of a young woman, who sustained a very extensive injury of the arm, with fractures of both bones, in which gangrene occurred, and during its progress, amputation was performed above the elbow, where the parts were healthy. The patient recovered. Also a second case of a man aged 44, who, from an injury of the hand with a hawser, was affected with gangrene of the right arm, which extended nearly to the elbow; the inflammation and swelling reaching the axilla. Amputation was performed about four inches below the shoulder-joint. This patient also recovered. The author considers it important to give publicity to the evidence which such cases afford in favor of Larrey's principles.

39. *Amputation at the Knee.*—Mr. Syme, professor of clinical surgery in the University of Edinburgh, has introduced the practice of amputating by dividing the femur at the knee-joint.§ Mr. Syme states as follows—there are few operations in surgery which have excited so much discussion as amputation of the thigh. The danger immediately attending its performance, and the inconvenience of its imperfect

\* *Gaz. des Hôpitaux*, July 8, 1845.

† *Monthly Journal of Medical Science*, August, 1845.

‡ *London and Edinburgh Monthly Journal*, May, 1845.

† *Archives Gén.*, Août, 1845.

result in rendering the stump uncomfortable, have suggested various modifications of procedure, with the effect certainly of restraining the hemorrhage, diminishing the patient's suffering, and promoting union of the wound. But the evidence of hospital statistics will show that the average frequency of death is not less than from 50 to 70 per cent., while many of the survivors suffer from uneasiness, connected with the protrusion of the bone. Having devoted much attention to the subject of amputation, seen the circular incision give place to the flap operation, and witnessed the results of these methods variously modified, in the hands of many surgeons possessing every degree of operative skill, Mr. Syme was at length led to the conclusion, that there is something radically wrong in the principle of the operation. The error he believes to be in dividing the thigh-bone through its shaft, instead of at the condyles or trochanters. But before attempting to establish the advantage of operating upon the latter principle, it may be proper to inquire how far the operation so conducted would attain the objects for which its performance is required.

The most frequent occasion for amputation of the thigh, Mr. Syme states, is afforded by diseases of the knee joint. Next to this may be ranked compound fractures of the leg and thigh; and then, tumors growing from the bones of the leg and thigh. In regard to the diseases of the knee-joint, the warrant for amputation lies in the bone, and not in the soft parts, which, however much altered through scrofulous degeneration or suppuration, readily admit of restoration to their natural condition, as is clearly shown by what happens after excision of the elbow, or amputation at the ankle-joint. In so far, therefore, as removal of the disease is concerned, amputation through the condyles of the thigh-bone would in this case prove sufficient. As to compound fractures of the leg, if the integument and muscles permit of the limb being removed at the middle, or lower third of the thigh, they cannot present any obstacle to a few inches more of the bone being preserved, while similar injuries of the thigh obviously require amputation at the trochanters. The same observation will apply to tumors of the bones, those of the tibia and fibula not requiring any more of the thigh bone to be removed than may be suggested by convenience, and those of the thigh-bone itself demanding the highest practicable point of section. From this analysis it appears that taking merely the morbid condition into account, all the cases admitting of amputation at or below the middle of the thigh-bone, would admit of the operation being performed through the condyles.

In considering the relative advantages and disadvantages of amputating through the shaft or condyles of the thigh-bone, it may be remarked, that this, the largest member of the skeleton, contains the most extensive medullary cavity, and possesses the thickest mass of dense osseous tissue. Dense bone dies more readily than that of a spongy or cancellated structure, and the action of a saw, to say nothing of ruffing the periosteum, must always be apt to cause exfoliation, which by impeding union of the soft parts, delays union, and opposes its perfect completion, by increasing the scope afforded to contraction of the muscles. It would, however, be a narrow view to suppose that the direct effect of local injury is alone concerned in causing death of the bone after amputation; and there can be no doubt that inflammation of the medullary membrane may co-operate, if it does not sometimes act exclusively in its production. The most conclusive evidence in support of this opinion, is presented by those conical-shaped exfoliations, extending up the interior of the bone, sometimes to the length of several inches, which are occasionally extracted from stumps. One of these in Mr. Syme's possession, taken from the humerus, is five inches long. And he believes the thigh-bone would be more fruitful of such exfoliations if amputation through it were not so fatal. But if the medullary membrane be liable to inflammation, suppuration of its texture and inflammation of the veins cannot fail to be the frequent consequence, especially in hospitals, where, notwithstanding every precaution, certain descriptions of injuries will always be apt to excite phlebitis, and other forms of spreading inflammation. But when the bone is divided through the condyles, nothing more than the epiphysis being concerned, the medullary membrane is not at all disturbed, while the cancellated texture is not liable to exfoliate, either from its proneness to die from injury, or through inflammation of any texture. It may, therefore, be expected that the operation would prove less fatal than when performed in the usual way; and that the stump would be less apt to prove imperfect, through protrusion of the bone. These expectations derive encouragement from the results of amputation at the ankle-joint, to which Mr. Syme was led by similar considerations. Of twelve cases in his own prac-

tice, and in nearly as many more in that of other practitioners, who have been induced to adopt it, this operation has not in a single instance been followed by either the death of the patient or exfoliation of the bone; and so far from selecting favorable cases for the purpose, Mr. Syme has repeatedly removed the foot in circumstances where he would have declined amputating the leg. Amputation at the condyles of the femur is not a less safe and advantageous substitute for amputation through the shaft of the thigh-bone, than amputation at the ankle is now found to be for removing the leg below the knee.

The following was Mr. Syme's mode of operating in the first instance: having applied a tourniquet, so as to compress the artery where it enters the popliteal space, an incision was made across the knee on a line with the *upper* edge of the patella; the knife was then pushed from one side to the other under the joint, a flap cut from the calf of the leg, and finally the condyles of the thigh-bone sawn through, so as to remove the whole articulating surface. On bringing the edges of the wound together, the flaps were found scarcely long enough, as they required a little stretching to meet, and when stitched, appeared more tense than is usually consistent with adhesive union; and the recovery, although complete, was rendered slow. Accordingly, in the second case, profiting by experience, Mr. Syme made the anterior semilunar incision in a line with the *lower* edge of the patella, and had the integuments retracted before cutting into the joint above this bone. The posterior flap requires to be very long, to the full extent of the gastrocnemii muscles; care being taken to avoid preserving more than a moderate portion in regard to thickness. In this second case union was nearly completed by the first intention, and recovery took place very rapidly.

Professor Syme states—1. That no doubt can exist as to the safety of amputating at the knee, and of the expediency of doing so with a view to avert the danger of operating through the shaft of the thigh-bone. 2. That the operation is attended with special advantages, such as the greater length of the stump which, particularly in females, must be desirable for the sake of appearance, and may perhaps be made available for using a support admitting of flexion at the knee. The operation is preferable also on account of the facility of using the tourniquet, and the patient's sufferings being less.

Mr. Fergusson of King's College Hospital has repeated this operation,\* adopting the lower line above described for the primary incision. He states there are other good reasons in favor of the operation besides those offered by Mr. Syme. It is a maxim that the danger of amputations increases as they approach the trunk, and it is accordingly an advantage to perform them as low down as possible: again, hitherto all the soft parts have been reserved from the thigh alone to form the stump; in the method before us, the flap for a stump is taken from the leg, where, in the case in question, there was ample material for making a flap of any extent required.

Mr. Fergusson makes one objection,—the difficulty of securing the popliteal artery. The vessel was so surrounded by effused lymph, and condensed cellular tissue, that he had to slit up the tissues ere he could seize it with the forceps, and even then, it was with no inconsiderable trouble that he could get a ligature placed so as to stop the flow of blood. The result, however, was such as to encourage him to follow a similar proceeding in the next eligible case.

40. *Amputation of the Ankle-joint.*—Dr. Handyside, of the Royal Infirmary, Edinburgh, has forwarded us several papers containing cases intended to assist in forming an estimate of the relative merits of amputation below the knee and at the ankle-joint for caries of the joint and tarsus. He describes the method of operating by antero-posterior flaps, as practised by Professor Syme, the soft parts of the heel being included in the posterior flap, and the flaps meeting transversely in front of the anterior margin of the lower end of the tibia; but Dr. Handyside recommends in preference a method by antero-lateral flaps. This operation is described as follows:—A strong bistoury was entered in front of the joint, and midway between the malleoli. From this point an incision was carried forwards, over the side of the instep, in a semicircular direction, and then downwards to the middle line of the foot, terminating immediately in front of the ball of the heel. The extremities of this incision were met by another and a similar one on the outer aspect of the joint, the second one terminating where the first had been commenced. The flaps were then dissected backwards,—the tendo Achillis was easily divided at its attachment to the os calcis,—and the separa-

\* *Lancet*, July 19, 1845.

tion of the foot was readily accomplished. The malleoli were removed by the saw, and along with them about one eighth of an inch of the lower end of the tibia, although the cartilaginous surface of the latter was not diseased. The anterior tibial and external plantar arteries were tied. After the introduction of the sutures, which were five in number, the flaps covered the bone completely, and the flesh of the ball of the heel was situated, as in the antero-posterior flap operation, below the extremities of the bones. A bandage was then applied to support the stump. The flaps united almost entirely by the first intention, and a month afterwards the patient could rest his weight on the stump; the ball of the heel continued to form an excellent cushion beneath the ends of the bones; the cicatrix was situated vertically on the fore part of the stump; it did not exceed two inches in length; and the leg was only an inch and a half shorter than the other, so that the patient could walk easily with a high-heeled padded shoe.

This operation is inapplicable in some instances, as in severe injuries at the ankle-joint with extensive contusion and laceration of the soft parts, or acute gangrene of the foot, &c., and therefore it cannot entirely supersede amputation of the leg; still it has been performed in more than twenty cases in Edinburgh, all the patients, except one, recovering, and no doubt can be entertained that it is less dangerous to life. It has many advantages over Mr. Syme's method; the flaps meeting vertically in front—the facility afforded of incising the pad of the heel, if necessary, backwards from the point where the two antero-lateral incisions meet—there being no danger from sloughing, since the posterior tibial artery is not divided—the operation being much more easily and rapidly performed—and the readiness with which, should suppuration take place, the matter drains from the lower commissure of the flaps,—are particularly enumerated. In separating the malleoli, it is better to employ the saw than the cutting pliers, as a thin slice of the lower end of the tibia ought always to be removed.

#### § IX.—Aneurism, and the Ligation of Arteries.

41. The labors of the last six months tend still further to elucidate the important subject of the various forms of aneurism, and their treatment. M. A. Bérard has described a new form of varicose aneurism.\* Authors, he states, describe two species of the disease—the *aneurismal varix*, which is a direct communication between the vein and the artery, and the true *varicose aneurism*, where a tumor exists between the two vessels circumscribed by the neighboring cellular tissue. M. Bérard's is a variety of this second species. Instead of forming a direct passage of communication between the two vessels, the tumor constitutes a sort of diverticulum on the parietes of the vein, at a distance from the artery, while a communication exists through the parietes of the vein contiguous to the artery into the latter vessel, as in the aneurismal varix. The case of a man whose brachial artery was wounded in bleeding is given. After having emptied the sac of the fluid blood and clots which it contained, M. Bérard placed a ligature on the artery two centimetres above the point whence the blood escaped at the bottom of the wound. Still, blood continued to flow,—black when the artery was compressed, both arterial and venous when the compression was removed. It was now ascertained that deep down the artery presented on its anterior parietes a large wound, nearly transverse, more than half way across the vessel. The posterior parietes of the vein presented a wound exactly corresponding with that in the artery. On the anterior parietes of the vein a third wound was discovered, exactly similar to the two former, and in the front of the vein there was an aneurismal sac. Thus the sac received the blood of the artery, mediate. Adhesion between the vein and artery below the puncture rendered it necessary to include them in the same ligature, when all hemorrhage instantly ceased.

M. Bérard believes this form of varicose aneurism exists much more frequently than that intermediate between the vein and artery, although not hitherto described.

42. *Ligation of Arteries.*—Several important cases have been put on record during the last six months, and considerable discussion entered into upon the principles of the remedy. (Arts. 75, 85.)

a. *Common carotid.*—Dr. Post, surgeon to the New York Hospital, gives a case of ligation of this artery for a subcutaneous venous erectile tumor of the cheek.† The

\* Gaz. Méd., June 7, 1843.

† Dublin Med. Press, Oct. 8.

patient died of phlebitis of the internal jugular vein, which was distended with purulent matter and shreds of fibrine. The inflammation of the vein extended to the base of the cranium, and pus was deposited between the membranes of the brain. The vein was not exposed or disturbed in any of its relations during the operation.

Dr. J. W. Campbell\* has reported a case of aneurism of the innominate, which occurred suddenly while the patient was splitting wood with an axe, and increased rapidly. After the portions of tumor presenting on the right side of the neck, immediately above the sterno-clavicular articulation, had reached above 3½ in. by 2 in. in dimensions, and its parietes had become very thin, a single silk ligature was passed round the common carotid artery, and firmly secured by a common double knot, one end being cut off. The aneurismal tumor disappeared immediately for several minutes. It gradually returned, but did not nearly regain its former size, and was much softer, more compressible, and less pulsatile. Four days afterwards the tumor was diminished to the size of a walnut. Bleeding was subsequently repeatedly necessary, with antiphlogistics and sedatives. On the fourteenth day the ligature was still firm, "the tumor quite flat." On the next day the patient imprudently exposed himself to cold, and had a febrile attack. A pulsating tumor now presented itself, extending from the cartilage of the third rib to the clavicle. On the nineteenth day from the operation there was great dyspnoea and other fatal symptoms; two pulsating tumors were felt rising up on both sides of the sternum, the larger one on the right side, in the situation of the original aneurismal tumor; and death took place in a few hours. On post-mortem examination, the aneurism within the chest resembled very much, in size and appearance, the heart inclosed in the pericardium. The symptoms, treatment, and post-mortem appearances are particularly detailed, and the case altogether forms a most interesting illustration of this fatal disease.

M. Lewis Bos describes a case in which the common carotid was tied, with a fatal result, for a tumor of the diploe, on the right side of the head, in a girl aged 17 years.† The tumor arose from a blow received twenty months before, was very large, and occupied the orbital and the frontal and right temporal regions. It was characterized by a crepitation and crackling, like parchment; the subjacent bones being very thin. In places where the bone was deficient a pulsation isochronous with that at the wrist was felt. Compression produced no cerebral symptoms. The right eye was greatly disorganized, and vision destroyed. The artery was tied to arrest the nutrition and rapid growth of the tumor; the first effects appeared to be satisfactory, pain subsiding, and the volume of the tumor diminishing; but ultimately it inflamed and suppurated, and fever, diarrhoea, and hemorrhage supervened, and the patient died about six weeks from the operation. On post-mortem examination the tumor was found to contain putrid matter and osseous fragments; a large extent of bone was in a state of necrosis, and the brain was in part exposed. In one part, where the morbid growth appeared to be in its first stage, the external table of the bone was as thin as paper, and in places altogether destroyed, being replaced by a resistant fibrous membrane, without pericranium. The interior was divided by fibrous bands, over which blood-vessels ramified. There was suppuration of the brain. The carotid was obliterated above and below the ligature, and at the point corresponding with the origin of the superior thyroid, externally, there was a large opening, by which the arteries communicated with an abscess, filled with pus and coagulated blood, reaching to the carotid canal at the base of the cranium. The pneumogastric nerve and superior cervical ganglion were surrounded by pus.

b. *External Iliac*.—A case is put on record in which this artery was tied for femoral aneurism, by Mr. B. Cooper,‡—result uncertain; another case in which the external iliac was tied by Dr. Duncan,—successful (Abstract, art. 75); a third by Mr. Liston,—fatal (Abstract, art. 85). We have heard of a fourth by Mr. Keate at St. George's Hospital,—fatal from peritonitis and cellular inflammation extending to the kidneys.

c. *The femoral Artery*.—A successful case of ligature of this artery, for popliteal aneurism, occurred to Mr. Hancock.§ Another successful case is reported by Dr. Nottingham,|| in which the patient died subsequently of another disease, with an important post-mortem examination, which afforded an additional illustration, that for

\* British-American Journal of Medical and Physical Science, April, 1845.

† Archives Gén., Sept., 1845, p. 92.

‡ Med. Gaz., Aug. 29, 1845. § Lancet, Oct. 4. || Guy's Hospital Reports, Oct., 1845, p. 201.

the cure of aneurism it is not necessary that the circulation of the vessel should be entirely stopped.

43. *On the mortality arising from Ligature of the Subclavian Artery*—Dr. B. G. Norris has an excellent article on this subject.\* According to a statistical paper by Mr. Phillips, one third of the cases of ligature of the large arteries, by Hunter's method, still prove fatal. By a table, drawn up by Dr. Norris, of operations performed on the subclavian, embracing all the cases that he could find recorded, amounting to 69, including those tied below the clavicle, and those tied within the scaleni muscles, it appears that 36 recovered and 33 died. Of 66 of these cases, 59 were males and 7 females; 6 of the females had aneurism, and 1 a tumor round the head of the humerus, mistaken for it. Of 54 cases in which the affected side is mentioned, 31 were on the right, and 23 on the left side. The age is given in 59 cases; 1 under 20 years; 10 from 20 to 30; 22 from 30 to 40; 11 from 40 to 50; 6 from 50 to 60; 8 from 60 to 70; 1 above 70.

Of the 69 operations, 56 were for the cure of aneurism; 9 for wounds and secondary hemorrhages; 1 for rupture of the axillary artery in an attempt to reduce an old luxation; 3 for diseases supposed to be aneurismal.

In 35 of the cases it is noted that the ligature came away—in 1 on the 11th day; in 6 on the 12th; in 4 on the 13th; in 1 on the 14th; in 3 on the 15th; in 4 on the 16th; in 3 on the 17th; in 2 on the 18th; in 1 on the 19th; in 1 on the 20th; in 1 on the 21st; in 2 on the 22d; in 1 on the 27th; in 2 on the 31st; in 1 on the 43d; in 1 on the 47th; and in 1 on the 85th.

In 1 of the 69 cases pulsation was observed thirty hours after the operation, and the patient died after repeated hemorrhages. In a second it was noticed a day afterwards, and disappeared after two days, the patient recovering. In a third it was observed two days afterwards, at the end of forty days was still strong, but ultimately the disease was cured.

With three exceptions, all the cases in which secondary hemorrhage occurred were fatal. In two of these cases it came on before the separation of the ligature, on the 16th and 19th days; in the third it came on the 4th and 5th days after the ligature had been cut off.

In six cases the tumor is stated to have *suppurated*, and was either opened or burst externally after the operation. Four were cured and two died. In two the suppuration occurred about the 7th week after the operation, and both did well.

In two cases the *contents of the tumor were discharged through the lungs*. In the first, the tumor began to increase eighteen days after the operation; eight days subsequently, six or eight ounces of bloody pus were brought up during a paroxysm of coughing, and the tumor suddenly diminished to half its size; it was punctured, and five ounces of the same kind of matter discharged with great relief; a cavity could now be distinctly felt between the sternal ends of the first and second ribs, through which the fluid had passed into the lungs, and the air passed into, and distended the sac whenever the patient coughed; sometimes escaping by the external opening. The discharge from the outer opening gradually diminished, and ceased in three weeks, and the patient recovered. In the second case, the tumor solidified after the operation, and its volume progressively diminished; nearly a month afterwards the patient had fever, and there was slight tenderness on the apex of the tumor; he was then suddenly seized with internal pain in the chest; the respiration throughout the right lung was bronchial, dullness occurred over the lower ribs, and the aneurismal tumor suddenly disappeared. The patient felt as if a fluid was passing from the pleuritic cavity into the tumor, and a splashing sound was heard at each inspiration, resembling the noise produced by shaking water in a closed vessel, and in a few days he died. On dissection, the aneurism was found to communicate by an aperture 1½ in. long by 1½ in. wide with the pleuritic cavity, situated between the first and second ribs, and obviously the result of ulcerative absorption, produced by pressure. Both ribs were denuded of periosteum; the right side of the chest contained nearly three quarts of bloody serum, mixed with laminated clots and flakes of lymph, the former of which had evidently been originally lodged in the aneurismal sac.

In connexion with these cases it may be well to notice one somewhat similar, recorded by M. Neret, of Nancy. The patient, aged 38, was admitted into the hospital

\* American Journal of the Medical Sciences, July, 1845.

for hæmoptysis, and found to labor under aneurism of the left subclavian, the size of a chestnut, which had existed about eight months. He died in a short time, and on dissection the aneurism was found to communicate with a cavity in the upper part of the lung, of the size of the head of a new born infant. A case of a similar kind is related by Mr. Guthrie, in his work on the Arteries.

Of the thirty-three fatal cases in the table, two died from sloughing of the tumor; nine from hemorrhage coming on from the fourth to the thirty-third day; five from inflammation within the chest; six from mortification of the extremity; one from effusion in the brain; one from exhaustion; one from inflammation; three from suppuration of the tumor; and in five the cause of death is not given.

In two of the sixty-nine cases, the aneurisms had been mistaken for abscesses, and punctured. In three other cases malignant tumors were looked upon as aneurisms. The first was that of a female, aged 18, operated upon in the Newcastle Infirmary; it proved to be a fungus hæmatodes; became less after the ligature, but speedily assumed a serious aspect, and terminated life; at least an inch of the artery was found obliterated. The second was a medullary sarcoma of the upper part of the humerus. In the third, the artery was taken up in April, 1835, the aneurism supposed to be cured. The 2d of July the patient died of dropsy, and, on dissection, it became evident that no aneurism had existed. The tumor was of a dense structure, and lying over the artery.

Some of the most celebrated operators have failed in their efforts to pass a ligature round the subclavian. In a very large aneurism, the clavicle being thrust upwards, so as to make it impossible to pass a ligature under the artery without incurring the risk of including some of the nerves, Sir Astley Cooper abandoned the attempt. In a large aneurism on the right side, M. Dupuytren, in 1818, believed he had succeeded, after one hour and twenty minutes, in placing a ligature on the subclavian from above the clavicle. Pulsation continued after the operation, and after death, which occurred on the ninth day, the ligature was found loosely knotted on that portion of the fourth cervical, which afterwards becomes the musculo-cutaneous nerve, and the artery was not included. In a soldier, aged 27, with hemorrhage in the armpit, from a wound received in a duel, Lallemand attempted, without success, to place a ligature on the subclavian above the clavicle; the hemorrhage was arrested by tying the wounded vessel, and he died on the following day. Mr. Cusack, of Dublin, attempted to place a ligature on the subclavian in its third stage; the aneurism was penetrated, and an alarming gush of blood followed, which was arrested by plugging the wound; the man survived ten days, but died of hemorrhage.

In one case in the table, the sac was accidentally punctured with the needle, in the attempt to pass it beneath the vessel, which gave rise to terrific hemorrhage after the ligature was secured, and was only checked by a sponge tent and pressure.

In a case by Liston (the first successful operation for axillary aneurism in Great Britain), the inferior nervous band passing out to form the axillary plexus was surrounded, instead of the artery, by the ligature—the mistake discovered, this ligature was used to pull the nerve a little upwards, so as to admit of the more ready exposure and deligation of the artery.

In cases of great difficulty in passing the ligature round the artery, it has been proposed by Mr. Hargrave and M. Cruveilhier to saw through, or excise a portion of, the clavicle, a procedure which we should suppose would tend greatly to increase the danger of the operation.

44. *Treatment of Aneurism by Compression.*—Two cases have come before us since the last Report (Abstract, vol. i., p. 228). The first by W. R. Jolly, Esq.\*

A greengrocer, aged 38, with impaired general health and disease of the bladder, on taking violent walking exercise, one day in April, 1844, was suddenly attacked with pain behind his right knee, followed immediately by a throbbing tumor about the size of a walnut. He went to bed, but could not rest for the pulsation, and on the following morning was unable to walk. By the 13th of July, the aneurism had greatly increased in size. On the 23d, a tourniquet was placed at the upper part of the thigh, and pressure maintained upon the vessel. On the 27th, the pressure was lessened, as the patient complained of great uneasiness and restlessness. The 30th, the pressure increased. August 5th, the tumor was more circumscribed, with less pain in the leg

\* Provincial Medical and Surgical Journal, August 20, 1845.

than formerly. 15th. Tumor very hard; less pulsation and bruit. 25th. Leg banded with a flannel roller from the feet upwards, and a pad of lint placed over the aneurism. Sept. 1st. No more severe pain; tumor considerably decreased; murmur still heard, but no pulsation in the tumor, or in the course of the artery between it and the pressure. 16th. The *presse-artère* removed. 20th. Allowed to take exercise. In July, 1846, there was no trace of the disease. During the treatment, hydrochlorate of morphia was freely employed.

The second case is described by Mr. Craig\* as an aneurismal varix at the bend of the arm, but we should rather consider it as one of the varieties of varicose aneurism. It resulted from venesection. An attempt was made to cure it by direct pressure on the tumor, which failed, and was accordingly abandoned. Compression was then made by means of an apparatus resembling the obsolete arched tourniquet, and the disease was cured.

**45. Aneurisms and Pulsatile Tumors of Bones.**—These diseases, which have hitherto been regarded by practitioners as cases of cancer, and have been nearly, if not entirely, overlooked as a distinct subject of investigation by systematic writers, are beginning to excite particular attention. Several long articles on the subject have appeared on the occasion of an operation performed by M. Nelaton for the cure of this disease.† These articles are extremely interesting in reference to the nature of the affection, and Mr. Stanley's paper is especially important as respects diagnosis; we accordingly subjoin a pretty full report of them.

Aneurismal tumors of bones are described as differing considerably in their character; they are sometimes analogous to the erectile tumors of the soft parts, being formed of vascular tissue analogous to cavernous tissue. Sometimes they consist of a single cavity containing liquid or coagulated blood, into which several arteries open—true aneurismal sacs analogous to those in the softer parts, with this difference, that they receive their blood from a greater or less number of vessels instead of from one arterial trunk. When uncomplicated with any other affection, as, for instance, a cancer, the appearance of the tumor is, in some instances, preceded by vague and transient pains, which soon become fixed and permanent; but most frequently the disease commences more abruptly, the patient suddenly experiencing an extremely severe pain, accompanied with a creaking sensation in the neighborhood of an articulation; this pain persists for two or three months, and then a tumor may be observed.

The tumor is, at first, scarcely perceptible, and may easily escape an observer who is not very attentive; but it soon increases, and presents the following characters. It rises considerably above the surface; the skin which covers it is, at first, of a natural color, but after a time it takes a rosy or violet tint; by its transparency it allows numerous veins in the sub-cutaneous cellular tissue to be seen; its base is lost in the neighboring soft parts, so that its limits are with difficulty defined; still it may be ascertained by the touch that it is continuous with the subjacent bone; by the touch, also, it may be ascertained that the tumefied part has a variable consistence, being soft and fluctuating in certain parts, and resisting in others; and, on pressing the hardest points, a sensation may be felt comparable with the crackling of dry parchment, or the bruising of egg-shells, produced by the osseous shell giving under the fingers. But one of the most characteristic symptoms of this tumor is pulsation synchronous with the arterial pulse, which does not consist in a simple elevation, but of a movement of expansion, as in true aneurisms, which is owing to the influx of a wave of blood at each ventricular contraction, and can be stopped by compressing the principal artery of the limb. While the course of the blood is thus arrested, the tumor becomes softer and more flaccid, and fluctuation may be felt, which is otherwise difficult to be ascertained. Slow, continued pressure reduces the tumor, and the skin may be compressed so as to perceive an excavation in the subjacent bone. Notwithstanding the pulsation, *no bruit de soufflet can be heard*. The tumors developed near articulations generally impede their motions; complete extension becomes impracticable, both on account of the painful traction which the ligaments exercise on the diseased bone into which they are inserted, and on account of the tension of the muscles which pass over the tumor and compress it. In all cases there is severe and continued pain, which pressure increases; sometimes also lancinating pains. The progress of the disease is generally very slow, the tumor being sometimes years before it acquires a considerable

\* Medical Gazette.

† Gazette des Hôpitaux, May 15, 26, June 19.



volume. It is uncertain whether, having attained a certain development, they would burst like aneurisms in the soft parts, since there is no case on record of such an event where it was certain that it was truly an aneurism of bone, and not a cancerous tumor with pulsation.

The disease occurs in young subjects or adults, and its causes are obscure. It sometimes follows external violence, contusions, or a sprain of a neighboring joint; still it remains doubtful whether these causes produce it, and it is more probable that they merely give rise to the first symptom noticed of a pre-existing affection. It may be confounded, first, with an aneurism of the soft parts; secondly, with cancer of the bone which pulsates; thirdly, with an encysted tumor of a bone. Where it is complicated with cancer of the bone the diagnosis is of less consequence, since every therapeutic indication has reference to the latter disease. The most important diagnostics of the two diseases are—first, that uncomplicated aneurism of a bone disappears completely, or nearly so by continued pressure, while in cancer, although diminished by the expulsion of the blood which its numerous vessels contain, a considerable mass cannot by pressure be made to disappear. Secondly, cancerous tumors of bone with pulsation have generally a slight bruit, which is never observed in aneurism. Encysted osseous tumors can only be confounded with aneurism so long as the osseous coat of the latter is sufficiently firm to prevent pulsation being seen.

This disease is always serious; if not resisted by treatment, it soon renders a limb totally unfit for use. It can only be cured by an operation, and this always a dangerous one. In the cases on record relapses are frequent, even after such an operation. No topical application to the tumor can cure it. The operations which have been proposed are—1. Resection of the portion of diseased bone. 2. Amputation. 3. Ligature of the trunk of the artery. When the disease has reached a certain stage, as in a case recorded by Scarpa, where the articular extremity of the tibia was completely separated from the shaft of the bone, amputation is the only resource. Dupuytren, in 1819, first applied a ligature, as in ordinary cases of aneurism; in 1826 Lallemand repeated the operation, and Roux has published two new cases. In Dupuytren's case the pulsation ceased, but the patient left the hospital with a tumor, and after the lapse of about six years the leg had to be amputated. Lallemand's case is said to have been cured; but we have no particulars by which we can determine that point. In one of M. Roux's cases the brachial artery was tied for a pulsatile tumor of the radius; but the disease was complicated with cancer, and the limb had to be removed a few weeks subsequently. In M. Roux's second case the cure was complete. M. Nelaton conceives that although these results are not completely satisfactory, they justify the application of the ligature before resorting to amputation.

M. Nelaton concludes his memoir with a case of aneurism of the internal condyle of the femur, in which the femoral artery was tied. Without any known cause the patient, a man of 22 years of age, felt a little difficulty in flexing the right leg on the thigh, which was most marked when he descended the steps of a ladder; this was soon followed by a remittent pain in the right knee, more violent at night than in the day, so as to disturb his rest. A small elevation soon appeared over the internal condyle of the thigh, which gradually increased, and then appeared to become stationary. There was a sense of numbness in the limb, and the patient himself remarked pulsations in the tumor, which corresponded with the motions of the heart, and were most violent when the limb was extended and the knee laid flat on its internal side. For some time past the pain had increased so as totally to deprive the patient of sleep, and was followed by swelling of the foot and leg.

On examination the tumor presented all the characters of an aneurism of the bone, the details of which appear to be very accurately described by M. Nelaton. M. Roux examined the case, and diagnosticated a sanguineous fungoid or an aneurismal tumor of the internal condyle of the femur, which had at present destroyed only a limited portion of the osseous tissue.

The absence of a bruit de soufflet, the almost complete reduction of the tumor by pressure, the manifest uniform expansion of the tumor, synchronous with the radial pulse, the absence of lancinating pains, and also of varicose veins in its vicinity, and especially on its cutaneous surface, assured M. Nelaton that it was an aneurism; but the memoir here enters into a theoretical discussion on the nature of the disease, and the opinion appears to be entertained that, after all, aneurism of bone is but one stage of cancer; that the aneurismal pouch is preceded by the formation of erectile tissue,

which, in the progress of the disease, breaks down into an open cavity; and that in its last stage of development the erectile tissue is neither more nor less than cancer. The facts recorded by Scarpa and the opinions of Professor Roux lead to this conclusion.

Mr. Stanley has also published a paper "*On pulsating tumors of bone; with the account of a case in which a ligature was placed around the common iliac artery.*"\* Mr. Stanley considers there are three causes of pulsation in the tumors of bone:—1, the proximity of the tumor to a large artery; 2, the development of a sort of erectile tissue within the tumor; 3, the enlargement of the arteries of the bone. Six examples of the first, which is the most frequent cause, are brought forward; one proved to be an encephaloid tumor, originating in the humerus; another was a compound of soft fibrous and dense osseous tissue; they all differed in their nature, and originated in different bones, but agreed in the circumstance that no other source of pulsation was discoverable in them than the contiguity of large arteries. A principal artery was tied in several of these cases, under the belief that the tumors were aneurismal.

In a case of recent occurrence in St. Bartholomew's Hospital, there was structure capable of enlargement by the distension of its vessels and cells, and assuming these to have been continuous with the surrounding arteries, the rush of blood into this structure might give to the whole mass a pulsation, resembling that of aneurism. Two cases are related in which the pulsation was ascribed to this cause. Several cases coming under the third head are also referred to.

Mr. Stanley states that the density and resistance of the immediate investments of these tumors appear to have a material influence over the production of pulsation in them. He even doubts whether any of them would pulsate without the resistance derived in one or other direction from the bone or its coverings. A tumor originating in soft parts, and unconnected with any bone, but situated close to a large artery, and confined within resisting structures, and thus approximating in its conditions to the pulsating tumor in bone, may, like it, pulsate in a manner to be mistaken for aneurism. Mr. Earle tied the subclavian artery for a pulsating tumor below the left clavicle, which had the appearance of aneurism; the man died six years afterwards; the axillary artery presented no indication of aneurism, but immediately behind the artery was a solid tumor, which had originated in the sheath of a large nerve.

Mr. Stanley's paper, so far as we can collect its import from the journals, is well calculated to put surgeons on their guard as to the diagnosis of these tumors. His case was a pulsating tumor of the pelvis, having its chief attachment to the left ileum, and projecting from both surfaces of the bone. It reached downwards to Poupert's ligament, and to the extent of about three inches into the abdomen. It felt moderately firm, and a little below the crista, near the anterior superior spine, a small moveable piece of bone was discovered, apparently involved in the tumor. The tumor pulsed throughout with the deep heavy beat of aneurism. *A bellows-sound was plainly recognized.* In consultation the preponderance of opinion was in favor of its being an aneurism. The common iliac artery was tied, and the man died on the third day, of peritonitis. On post-mortem examination, a medullary tumor was found, about the size of a filbert, in the wall of the left ventricle of the heart, and medullary matter in the bronchial glands and lungs. The tumor in the pelvis was composed of a spongy tissue, connected with the ileum, with cells and convoluted vessels distributed through it, and there was a tumor in the arm about the size of an orange, which before death appeared to be innocent, but which now turned out to be identical in structure with the tumors in the pelvis.

It is remarked that this case tends to show that little value can be attached to the presence of a bellows-sound in the diagnosis, between aneurism and the pulsating tumor of bone. Still, inasmuch as this was of a fungoid nature, and it is admitted that in such cases a bruit de soufflet may occur, it does not altogether disprove the statement in the former page, that in an "aneurism of a bone" no bruit de soufflet can be heard.

Mr. Toynbee stated to the Medico-Chirurgical Society a case of pulsating tumor of the parietal bones, in a young man of nineteen, who died of consumption, where the tumor was almost entirely composed of blood-vessels, and contained no cells or other structure.

\* Medico-Chirurgical Transactions, vol. xxviii., Art. v.

We learn from an experienced hospital surgeon of many years' standing, that he has met with but one case of this kind; a man's femur was amputated for a tumor, which, on dissection, was found to consist of a large mass of coagulated blood within the bone. The disease was referred to fungus hæmatodes. The term *osteo-aneurism* is applied by Professor Miller to the above affections of the bones.\*

#### § X.—Constitutional Diseases.

46. *Syphilis*.—M. Ricord† observes that the syphilitic poison is eminently alterant and disorganizing, that it produces a manifest alteration in the elements of the blood, and that the essence of the disease is hyposthenic. He reiterates his former denial that any mode of administering mercury after an infectious coition will enable us to secure the immunity for ever of the system from constitutional syphilis. He denies also that mercury produces fever, or causes falling off of the hair; on the contrary, it prevents the latter, and when fever occurs, it behoves the practitioner to look carefully to the lungs and other vital organs. In enumerating the accidents caused by mercury, he cites the case of a man under mercurial treatment, who died of suppuration of the brain, where mercury was obtained after death from the brain by chemical analysis. In a course of lectures on the subject of syphilis by M. Lallemand, now publishing in the "Medical Times,"‡ many very important points in reference to the transmission of the disease congenitally are strongly insisted upon, and illustrated by cases. Children are affected with syphilis without the mother ever having exhibited any symptoms, in which case the transmission must be by the father, who at the time of, or for some years previous to the conception of the child, may not have exhibited any evidence of the disease. Cases are detailed of lupus after primary syphilitic and gonorrhæal affections; and of the most hideous leprosy, cured by anti-venereals; and others tending to prove, to the contrary of the prevailing opinion, that venereal affections, when neglected or badly treated, are as fatal as formerly.

A second edition of Mr. Langston Parker's work on "Syphilis" reached us as we were closing this Report, but as we intend to give a *resumé* of the recent improvements of practice in this disease, in our next volume, we confine ourselves at present to a few cursory gleanings on the subject. M. Boys de Loury of St. Lazarus,§ recommends opening buboes in the groin, early after the formation of pus, by a small subcutaneous puncture; he employs a bistoury with a long narrow blade, as used in tenotomy, and introducing it from below upwards, and from within outwards: moving the point of the instrument under the skin, he breaks up the tissue much as the lens is broken up by the cataract needle; the matter is evacuated by gentle pressure, and the wound kept open a few days with some shreds of charpie; several years' experience has confirmed the advantages of the plan. Mr. Arnott|| holds the opinion that it is a mistake to suppose that the venereal testicle never suppurates, and he gives two cases of *venereal abscess of the testis*, corroborative of his views; and after describing various venereal affections of the tongue, and their appropriate treatment, Mr. Lawrence¶ says that the beneficial influence of mercury in ulcers of the tongue, mouth, and throat, has always appeared to him to afford the most unequivocal evidence of its peculiar anti-syphilitic virtues; for while the sound mucous membrane is inflamed and ulcerated by the action of the remedy, the contiguous venereal ulceration becomes altered in character and heals rapidly.

47. *Malignant Diseases*.—We have nothing of very great importance on this subject to detail. M. Manec, surgeon of Salpêtrière, is reported\*\* as having obtained daily the most favorable results in the treatment of *external cancer* by arsenical caustics, the remedy of Fabricius, Tulpus, Dubois, and Dupuytren: his formula is, arsenic acid 0.30 parts; cinnabar 1.50 parts; calcined sponge 0.75 parts. Mr. George,†† surgeon to the Bath Hospital, describes the case of a woman aged 35, in whom an open fungoid tumor attained the size of a pullet's egg in the hollow of her left foot; there were several smaller tumors surrounding it, and the glands in the upper part of the thigh were enlarged and tender. After taking Brandish's alkaline solution for about six

\* Lib. etc., p. 501.

† Med. Gaz., July 23.

\*\* Ar. hives Gén., Août., 1845.

† Gaz. des Hôpitaux, Aug. 15.

‡ Sept. 12, 1845.

§ Ib., Aug. 32.

¶ Gaz. Méd.

|| Prov. Med. and Surg. Journal, Oct. 22.

weeks the disease began to give way, and again in about six weeks she had recovered her health, the tumor had contracted to the base of the skin, had cicatrized, many of the surrounding tubercles had disappeared, and the glands in the thigh were much reduced in size. She remained well both as to her foot and general health for eight months, when the latter began to flag, and she died with jaundice and other hepatic symptoms in about six weeks, previously to which the femoral glands had attained the size of a large hen's egg, and many tumors appeared beneath the skin on the thorax and abdomen. On dissection, encephaloid tubera in every stage of degeneration were found in both lungs, in the liver, beneath the pleura, in the subserous membrane of the left ventricle of the heart, in the submucous tissue of the ileum, and in the inguinal glands which were united into a large mass.—The post-mortem examination of an enormous cancerous tumor with internal deposits is described by Sir Charles Aldis,\*—and Dr. Fletcher gives a case of fungoid disease, which had developed itself gradually in the space of a year and a half over various parts of the body, in the form of nodules of various sizes, increasing from that of a pin's head. There were urgent symptoms of pressure upon the bronchi.† This case may be advantageously compared with Art. 34, p. 73, among our extracts, and with various forms of disease which have been referred by authors to the genus molluscum.

Some of our readers may not be aware of the occurrence of fungus hæmatodes in the dog. The following case well illustrates the constitutional nature of the affection in this animal. A large fungus in the neck of a pointer was first observed about the size of a pea, five months previously;‡ the tumor was removed; there was a full discharge of healthy matter from the wound, which healed in three weeks; three months afterwards another tumor had attained nearly the size of the former one; this also was removed; five days after the removal of the second, a third made its appearance. This also was removed, but in a few days the dog died, and on exposing the cavity of the thorax it was almost covered with tumors, from the size of a pea to that of a pigeon's egg; the intercostals had many adhering to them, a few small ones were developed in the heart, and three in the diaphragm. These tumors were nearly white, rather hard, and of a glandular substance; the external ones soft, red, and destitute of blood-vessels (?), except the first. There was great emaciation.

#### § XI.—Varia.

48. *Varicocele*.—Surgical writers in this country so frequently refer to Breschet's method, Ricord's method, &c., of obtaining a *radical cure* of this complaint, without giving any account whatever of what the method consists in, that we have considered it important to give the following statement of the various plans resorted to, condensed from a memoir published by M. Helot.‡

There are rules common to every operation. To render the veins more prominent, the patient should first walk for an hour or two, and in cold seasons, a hot bath should be prescribed. The operation should be performed, as much as possible, in the erect position, but with a bed at hand, in case of syncope. The varicose veins must be carefully separated from the vas deferens and spermatic artery, for which purpose the whole of the tumor should be held between the thumb and the indicator and middle finger, and the vas deferens sought for with the other hand. This canal, generally about the size of a crow-quill, hard, elastic, rolling under the fingers, on pressure giving pain analogous to that which is produced by compression of the testicle, is easily separated from the disease. It is usually found behind and within the varicose veins, and should be there retained. It is necessary to be satisfied also of the existence of two vasa deferentia, external to the cutaneous fold in which the operation is to be performed.

*Breschet's Method*.—This consists in the application of two pairs of forceps which, by compression, produce mortification of the skin and veins included in their teeth. The forceps are about four inches long. The male branch carries two vertical shafts, which fit into two corresponding mortices in the female branch. By the union of the two branches, the parallelism of the two teeth is maintained, whatever may be the degree of their approximation to, or separation from, each other. The constriction is effected by means of a compressing screw. The teeth of the forceps are cut with

\* Med. Times, Nov. 1.

† The Dog; by William Youatt, 1845, p. 248.

‡ Prov. Med. and Surg. Journal, Oct. 32.

§ Archives Gén. de Méd., Juillet, 1845.

a slanting edge like the blade of a knife, the edge of which is blunted, or rather rounded. These forceps will cut only by considerable pressure sustained for a long time. Various modifications have been proposed in the teeth of this instrument; thus, in M. Landouzy's forceps, one tooth is grooved so as to receive the other, cut into a slope, and dentated like a small saw. M. Chauviere afterwards adapted to the groove, a small blunt blade which could be applied or withdrawn at pleasure. Bérard, to avoid the veins of the skin escaping by the free extremity of the forceps, believed it necessary to add two needle points, which, penetrating behind the cluster of veins, would prevent them escaping from the compression. Behind the teeth in each of the branches, Breschet contrived a round opening, in which the external part of the fold of skin to be preserved might lodge. M. Landouzy considerably enlarged this space, by making it quadrangular; his intention being to elongate the teeth of the forceps at pleasure, by means of small iron plates, which each of the branches carry, and which, rendered moveable by a screw, fill up the space to a greater or less extent at the will of the surgeon. These forceps in their various modifications are thus applied: while the surgeon seizes between the fingers, in a fold of the skin, all the varicose veins, so as to leave behind the vas deferens and spermatic artery, which are connected together, an assistant clasps the superior part of the fold, with the teeth of the forceps, which are brought together by means of the screw, so as to produce a sufficient compression, to prevent the veins escaping; after which the surgeon, abandoning the fold, ascertains if all the veins have been firmly seized; then, at the inferior part of the scrotum at the most distant point possible from the testicle, forming a fold similar to the first, the surgeon keeps the varicose mass between his fingers until a second pair of forceps is securely applied.

According to M. Landouzy,\* at the moment of constriction, the patient experiences a sharp pain which extends along the cord and sometimes produces syncope. During the first days, an active inflammation occurs. The skin of the scrotum becomes tense and painful to the touch, painful erections occur, which interrupt sleep, sometimes swelling of the testicle, and if gonorrhœa exists its symptoms are aggravated. Head-ache, severe fever, erysipelas, diffuse inflammation of the scrotum requiring incisions, sometimes take place subsequent to the operation, yet the patient gets well after two months' treatment. The complete section of the parts included between the teeth of the forceps is obtained from about the tenth to the fifteenth day; but the separation of the eschars, the irregularity of the edges of the wound, and the contraction of these edges, render the cicatrization of the wound protracted and difficult, extending even to a month or six weeks after the removal of the instrument.

Inflammatory symptoms must be combated. To avoid violent painful erections, care must be taken at the time of the operation to leave the upper part of the penis perfectly free. As the separated parts, resulting from the double wound produced by the application of the two pairs of forceps, are very difficult to hold together, even when sustained by a very appropriate bandage, and remain separated from each other by the natural disposition of the parts, erections dragging the superior lip upwards, and the weight of the scrotum, the inferior lip downwards, a very important precaution requires to be taken in applying the forceps; it consists in preserving on the exterior of the part of the scrotum embraced by them, a pedicle of skin, which by lodging in the fold behind their teeth is not compressed; this pedicle will prevent the excessive gaping of the wound.

This operation is less severe, and much more seldom fatal than the ligature. Still in one case recorded, death supervened. A relapse may also take place. M. Landouzy cites a case in which the affection reappeared some months after the first operation, and he accounts for this circumstance by a large vein having escaped the forceps. In one case after a cure of the affection in the scrotum, it reappeared in the veins of the cord within the inguinal canal; the forceps were applied on a level with the external orifice of the canal, and the patient cured. Breschet is said to have operated on more than 100 individuals with success. In how many the cure was permanent is doubtful.

*Sanson's method.*—This consists in the application of forceps with flat and polished teeth for the purpose of arresting the circulation, and producing adhesion of the parietes of the veins, and obliteration by the formation of a clot without destruction of the

\* Journal des Connaissances Médico-Chirurgicales, Mars, 1836.

tissues. This measure is only to be regarded as a palliative, more efficacious than some others that have been resorted to. The veins soon become permeable to blood again.

*M. Renault's process.*—A thread is conducted by means of a needle behind the varicose veins, the two ends brought forwards, and the veins and the skin strangulated by tying the thread on a cylinder of wood or a quill. By increasing the constriction daily, in a short time the veins and skin are divided, and the divided part heals as a simple wound.

*M. Velpeau's process.*—A strong needle is passed through the fold of skin, behind the varicose veins, and the constriction is effected on the needle by means of a figure of 8 thread, as in the operation for harelip; or, the ends of the needle being forcibly raised, a circular ligature is placed behind, which strangulates all the parts; the point of the needle is then nipped off, and the operation terminated. The ligature falls off about the tenth or twelfth day, with a complete section of the skin and veins. A second ligature may be placed about two fingers' breadth from the first, for the purpose of destroying a greater extent of vein. Serious accidents, as diffuse inflammation of the scrotum, and inflammation of the tunica vaginalis, have sometimes resulted from this operation. M. Velpeau appears to have abandoned it.

*M. Ricord's process.*—A straight needle carrying a double ligature, the extremity of which accordingly forms a noose, is carried through the fold of skin so as to pass between the vas deferens and the veins: then, letting the veins loose, and holding the skin only at the point of exit of the first needle, a second needle, having a double ligature also, is carried before the cluster of veins, and brought out by the opening made where the first needle entered; so that the varicocele is circumscribed before and behind by a double thread, with but one opening at each side. The two ends of the double ligature on each side are then passed through the corresponding noose of the other ligature. In this manner the veins are embraced in a slip-knot, which is to be tied. For this purpose it is only necessary to draw the threads tight, having fixed them in an instrument, the purpose of which is to serve as a fulcrum to the threads, so that a gradual compression may be employed till the veins are cut through. This instrument is of the shape of a horse-shoe, the extremity of each branch of which is pierced with a hole, in which the ligature is tied. Having passed through a groove on the convexity of the instrument, the two threads are joined by a knot on a small pivot placed in the centre.

By turning the pivot every day, the constriction is increased until the veins are cut through. When this takes place, the two ends of the ligature form only a moveable seton in the subcutaneous wound, which, with the instrument, may all be removed together. When the varicocele is large, two ligatures may be employed to break the continuity of the veins in several points. A case is given in which a relapse occurred after this operation, and another case where an anomaly was met with in the situation of the testis; the epididymis being before and below the gland, and the vas deferens before the cluster of veins. Dr. Hélot remarks that this anomaly is not very infrequent, the importance of which fact may be easily understood.

In this operation by subcutaneous ligature of the veins, the division of the tissues is produced by inflammation and suppuration, the products of inflammatory action escaping by the openings into the skin. In three cases out of fifteen, phlegmonous inflammation extended so as to require lancing to evacuate the pus; but this proved of little importance. M. Ricord has in no case been obliged to loosen the ligature before the veins were divided. The method first adopted by this surgeon, which consisted in turning the veins under the skin with a needle, and at once strangulating them with a single loop of cord, appears to Dr. Hélot preferable to the slip-knot. M. Ricord, who was at first content with the single ligature, substituted for it the one above described.

The simple subcutaneous ligature is applied as follows; a needle is passed through the fold of skin behind the veins, then returned through the opening from which it issued, and conducted immediately under the skin before the veins to the orifice where it first entered; the cluster of veins is thus inclosed in a loop of thread, the two ends of which pass out of the same opening; the constriction is at once made by tying them, and the operation completed. This operation has the advantage over those of Breschet and Velpeau in not producing loss of substance; which always becomes a large wound, and thus retards the cure. But it has the disadvantage of not diminishing

the exaggerated volume of the scrotum; while the forceps of Breschet, by destroying the skin over a large space, forms in some measure a natural suspender, as well by the adhesion of the cicatrices as by the diminution of the scrotal envelopes.

*M. Vidal's process.*—1. A strong, straight needle, with a lance-shaped point, is bored at the other extremity in the direction of its axis. A very fine silver thread, of the diameter of a large pin, folded at the end, is screwed upon this needle. By means of the needle the silver thread is carried through the fold of skin behind the cluster of veins. The thread thus placed behind the veins forms a noose (?) of which the two ends project from the orifices by which the needle entered, and passes out of the skin. Between these two openings is placed the pad of a small bandage; it is on this species of small cushion that the thread is tied; below the knot a canulated probe is passed, which represents the handle of the old instrument employed for the compression of arteries, and is to be turned in the same way.

This lever being always turned the same way a very powerful compression may be obtained; by turning it the contrary way the constriction may be diminished at will.

II. *Twisting of the veins of the spermatic cord.*—A silver thread is passed behind the varicose veins as in the former process. Another thread, conducted by a needle like the former, is placed before the veins immediately under the skin, taking care that the needle enters and goes out by the same orifices which have served for the passage of the first needle. The extremities of the threads are then to be twisted. The first effect of this torsion is to contract the loop which contains the veins gradually. On turning this metallic cord on its axis it necessarily twists round with it the parts contained between the two threads which compose it. Thus the veins twist on this double metallic thread, as the rope twists on a capstan. A small pad is then placed on the skin between the openings for the metallic wires, the two ends of which are twisted upon it.

After stating that M. Vidal has published fifteen cases treated in this manner, Dr. Hélot remarks that this surgeon has exaggerated the gravity of this affection to justify his conscience in performing so many operations in so short a time. If varicocele is a very common complaint, it is at all events very seldom that it produces any serious consequences. The results of the operation by ligature with torsion of the veins are nearly the same as those by Bresschet's forceps, or the needle operation of Velpeau. It produces considerable loss of substance, and a cure is not obtained in less than six weeks or two months. With respect to relapses, time will determine the relative or absolute efficacy of this mode of treatment, which cannot be attended with less danger than the others.

49. *Sacro-lumbar Hydrorachitis.*—Professor M. Paul Dubois has adopted a new treatment in this affection.\* A female infant, in other respects well formed and healthy, presented a tumor on the inferior part of the lumbar region and superior part of the sacrum. The skin which covered it was of a deep red color, becoming darker and of a violet hue towards the centre; it had an appearance as if denuded of the epidermis. The presence of fluid in small quantity was easily recognized by the touch, and by pressing equally at all points the tumor might be partly reduced without occasioning symptoms of compression. On pinching the external parietes, severe pain was indicated by the infant's cries. The lower limbs moved naturally on the pelvis. On pressing the centre of the tumor the vertebral column was easily reached, and the disjunction readily detected. It was almost certain that the cavity of the arachnoid was the seat of the fluid. At the top of the tumor two points existed, from which serosity exuded, and another in the inferior part, being the commencement of ulceration.

To prevent ulceration, the day after birth M. Dubois punctured the tumor with a long straight *tenotome*, when a much larger quantity of serum escaped than was anticipated from its size. A strong solution of acetate of lead was then applied, and afterwards very moderate compression. On the following day the skin was changed in appearance; the small orifices from which serosity previously flowed were closed, the redness was less vivid, and the size diminished. On the sixth day another puncture was made, with the same result. The skin had nearly lost its unnatural redness. After this the liquid was much more rapidly reproduced; three days afterwards it was

\* Annales de la Chirurgie, July, 1845, p. 372.

necessary to operate again—then again in three days—and lastly, a fifth time, two days subsequently to this.

The infant took nourishment well, but the discharge of serum debilitated it; there was no symptom of paralysis or spasms, although death was threatened. Under these circumstances, M. Dubois proceeded as follows:

The tumor was evidently somewhat diminished transversely; the skin was also improved. Having ascertained the possibility of bringing the two sides together at the base, he had two small iron plates made, eight centimetres long and ten millimetres broad, with one face concave and the other convex, and pierced through with many holes. At each extremity there was a small head supported on a narrow neck.

After puncturing the tumor anew, the professor proceeded thus:—An assistant pinched it up transversely, and brought the parietes as close together as possible; he then applied the small plates on each side, in the direction of the vertebral column, and as near as possible to its base, the convexity looking inwards; then leaving them to an assistant, who kept them in position, he fixed both, by bringing them as near as possible together with a thread twisted round the necks, which supported the rounded extremities of the plates.

In this manner the tumor was greatly contracted at its base, and its parietal fold supported by itself. To promote the development of the adhesive process, two pins passing through the holes made in the instruments traversed the base of the tumor. The patient suffered much, in the evening was very ill, and the inferior extremities were powerfully flexed on the abdomen. Accordingly the instrument was withdrawn, and the patient died three days afterwards.

On the post-mortem examination the vertebral column was found divided in the last three lumbar vertebrae, and in the superior part of the sacrum; violent inflammation had taken place throughout the arachnoid membrane, and pus was effused in its cavity; under the visceral fold a layer of pus was also observed. The membranes of the brain were inflamed, the lateral ventricles dilated, and loaded with sero-purulent fluid. The spinal marrow left its canal in the centre of the fissure, and adhered to the external parietes of the tumor, where it could not be followed, since it was lost in a shapeless purulent mass, with a strong gangrenous odor. It was impossible to recognize the sacral nerves until they left the sacral foramina. All the other viscera were healthy.

The paper proceeds to show that the following are the circumstances which ought to be taken into consideration, if the present state of surgical science justifies us in entertaining the question of operation in this disease.

*As contraindicating any operation.*—1. When there is any other malformation, as hydrocephalus, umbilical hernia, paralysis, a double tumor, &c. 2. When the tumor has a very large base, particularly vertically. 3. When the skin covering the tumor is incompletely formed and ulcerated. 4. When the tumor appears to be highly sensible on pressure, and especially when this sensibility exhibits itself acutely on pressure upon the most projecting part. 5. When the tumor cannot be moved in the slightest degree without pain. 6. When the fluctuation is perceived unequally, and when it appears to reach the finger of the observer more immediately if sought for at the summit of the tumor. The whole of these latter circumstances indicate the existence of hernia of the spinal marrow.

*In favor of some operative measure.*—1. When the child is otherwise perfect, and the tumor unique. 2. When the tumor is pediculated. 3. When the skin covering it is completely formed, and no ulceration exists, and when a uniform transparency of the tumor can be recognized through the skin. 4. When pressure exercised all over the tumor occasions little or no pain. 5. When the movement of the tumor is unattended with pain. 6. When the tumor fluctuates freely and uniformly under the whole external parietes.

Tumors which are formed of a serous cyst external to the dura mater frequently present these characters, and the instances of cure by operation are mainly referable to such cases.

M. Dubois proposes to modify his plan, by making the plates longer and without orifices, and commencing the operation by passing through the tumor at its base, two, three or four pins, according to its size, taking care to pass them from one side to the other quite at the base; then to apply the two plates under the ends of the pins, and to bring them together with threads as before, taking care to exert a uniform pressure



at both extremities, so that they cannot slip from the base of the tumor, retained as they would be by the pins previously introduced.

The principle of M. Dubois's measure is to bring together the serous walls at the base of the tumor, forming a species of ligature, and the previous introduction of pins not only facilitates the application of the instrument, but renders the adhesive inflammation more prompt and efficacious. The cutaneous pouch would be easily removed after the tumor closed at its base.

50. *Burns*.—The great fatality of these accidents treated by any of the accepted methods, both in hospital and in private practice, gives an interest to every new proposal, and to every modification of the various plans which have been adopted. In the Hôpital St. Louis, they have been recently treated by M. Jobert with great success by means of iced water.\* In extensive burns the cold bath is used repeatedly, and in the intervals, the injured parts are kept covered with large pledgets of cloths steeped in cold water, and covered with bladders of ice. Patients are said to have recovered under this treatment, who, in all probability, would have perished had it not been adopted. The cold water treatment is accompanied in bad cases with bleeding, low diet, and refreshing drinks, by which general reaction is completely checked. When the eschars are about to separate, the ice is replaced with simple applications of cold water. Under the treatment the patients feel refreshed, the pains abate, the fever diminishes, and they enjoy sleep, the restorative powers are invigorated, and a speedy cure occurs.

The theory employed to account for the efficacy of this treatment is, that mortification from a burn occurs the moment the caloric is applied, and even at places where nothing is appreciable, but where eschars appear at a later period. The fact must not, however, be overlooked that mortification may come on spontaneously from the phlegmonous reaction, which is of a gangrenous nature, independently of the primary action of the caloric. The burned parts for a time remain very warm, and the whole adjacent tissues may be felt of a burning heat for a short period, and the primary and fundamental indication is the withdrawal by every possible means of the caloric accumulated in the injured part, whether it be that communicated by the original burn or that caused by reaction. M. Jobert is very severe on the use of cotton and other specifics from the East with "occult qualities."

Professor Miller is in favor of instant immersion in cold water,† and retaining the parts there, not for minutes, but for hours; but when a burn or scald involves a large part of the surface, he lays it down as a principle that nothing must be done to favor the depression, on which account the continuous use of cold cannot with propriety be employed. Chelius also favors the use of cold in the slightest degree of burns.‡ But the use of cold water and ice in cloths or in bladders was strongly advocated by Mr. James Earle. Mr. South's notes to Chelius comprise a resumé of the various remedies which have been in vogue.§

In the above Report, cases and operations are described, as nearly as is consistent with brevity, in the words of the respective authors. Several important articles have recently come to hand, which will furnish valuable matter for the next volume.

\* *Annales de Thérapeutique*, May, 1845.

† *Lib. cit.*, p. 112.

‡ *Lib. cit.*, p. 660.

§ *Ibid.*

### III.

## REPORT ON THE PROGRESS OF MIDWIFERY AND DISEASES OF WOMEN AND CHILDREN.

BY THE EDITOR.

### § I.—Pregnancy—Labor—The puerperal State.

1. *Signs of Pregnancy.*—The following aphorisms of M. Moreau\* may be advantageously called to mind by those who have to decide the frequently all important question of the existence or non-existence of pregnancy :

1st. No one sign can determine a recent conception to a certainty.

2d. The existence of pregnancy cannot be infallibly determined by the so-called rational signs.

3d. The signs afforded by inspection are insufficient.

4th. Pregnancy can alone be determined by the audible and tangible signs appertaining to that condition.

5th. Among the latter, the active motions of the fœtus may be mistaken for movements depending upon disease. [And vice versa, as in a case related by Mr. Horne, "Lancet," June, 1845, in which the fœtal motions were simulated by tænia.]

6th. The beat of two hearts, the maternal and fœtal, which at once denotes pregnancy, is sometimes wanting, the latter is also not heard when the fœtus is inanimate.

7th, and lastly. The motion of *ballotement* is the best and most constant of all these signs, because it belongs only to pregnancy [Ed.?], exists when the fœtal pulsations are absent, and even when it is deprived of life.

2. *Extra-uterine Fœtation.*—The references† in the margin relate to four cases of extra-uterine conception which have been placed on record during the previous six months. All eventually proved fatal. The subject of the first case sunk under symptoms of peritoneal inflammation, which had continued for ten days. After death, in addition to the ordinary appearances of peritonitis, a coagulum of blood was found completely imbedding the uterus. Upon searching for the cause of the hemorrhage, a rupture was discovered in the right fallopian tube, which had bulged out to the size of a walnut. The uterus contained a well formed deciduous membrane.

In the second case, which came under the notice of Dr. Blackman, of Newburgh, U. S., the female presented herself for the removal of a foreign body from the rectum. Her history gave evidence to her having been pregnant, and having experienced labor-pains at the full term, which however speedily subsided. The body which protruded from the anus proved to be a fœtal tibia. As the woman was fast sinking from marasmus, and the presence of a tumor in the abdomen taken in connexion with the history so clearly indicated extra-uterine pregnancy, gastrotomy was resorted to as a last hope. The patient, however, died before the operation could be completed. After death a full-born fœtus was discovered in the peritoneal cavity, together with a perforation in the sigmoid flexure in the colon through which the leg had passed.

The third and fourth cases to which we refer are reported by Dr. Oldham. The first of these proved fatal by rupture and hemorrhage into the peritoneum. The second was an instance of interstitial uterine pregnancy, and one, therefore, of great rarity, as Breschet, who has been at the pains of collecting these cases, has only been able to report four. Dr. Oldham concludes his paper by expounding his views of the

\* Practical Lectures on Midwifery. American Translation, reviewed in Med.-Chirur. Review, Oct., 1845.

† Bibliothek für Læger, No. 1, 1845. American Journal of Medical Sciences, July, 1845. Guy's Hospital Reports, Oct., 1845.

causation of the malposition of the ovum. He considers that this untoward event most commonly depends upon the existence of false membranes, the production of partial inflammation, which, either by girding the fallopian tube itself, or by fixing it in a false position, form a more or less complete obstruction in its calibre, so that although the grasp of the fimbriated extremity may be perfect, the ovum is necessarily intercepted in its passage to the uterus. The difficulties which occasionally offer themselves to the formation of a correct diagnosis in cases of extra-uterine foetation are lucidly displayed in a paper by Jobert de Lamballe, detailing an unusually obscure example of the accident, which had previously been regarded as ovarian dropsy. M. Jobert and M. Dubois, who were consulted on the occasion, both lay great stress upon the suppression of the menstrual discharge as the chief diagnostic sign between the two affections; M. Dubois stating that he had never met with an instance of ovarian cyst in which it was absent.\*

[This will evidently strike the reader as much too sweeping an assertion, since, in the latter stage of ovarian dropsy, as in other diseases which gradually undermine the vital powers, the menstrual secretion must be expected to subside. We cannot conceive any great difficulty in establishing the fact of extra-uterine conception, if the early history of the case can be clearly ascertained; without this assistance the case is materially altered.]

3. *Occlusion of the Vagina and Os Uteri*.—Two cases of the complete occlusion of the vagina during pregnancy have lately been published. The first† case, which occurred in the Maternité of Paris, had originated in a laceration of the parts during childhood, but impregnation had taken place through a small opening which scarcely admitted the female catheter. No interference with the case was attempted until labor had commenced, when a crucial incision was made as soon as the head was felt pressing upon the perineum. M. Danyau, who performed the operation, was enabled to obtain a perfectly formed vagina.

The second case, which occurred in the practice of Dr. Devizac,‡ of New Orleans, was in every respect similar to the above, with the exception that the occlusion was the consequence of a previous severe labor.

A case of obliterated os uteri, in which labor was completed by a crucial incision of the cervix, is to be found in the "Encyclographie Médicale," of August, 1845.

4. *Labor and its Complications.—Induction of Premature Delivery*.—The subject of premature delivery is considered at great length by M. Lacour. The first part of the essay, which is occupied with an inquiry into the moral bearings of the question, need not detain us, as it is well known that many of the opinions entertained by French writers upon the point will find little favor with British practitioners. The second portion being purely historical may likewise be passed over without comment. In the third part of the essay, the author examines into the circumstances which render premature delivery necessary, and, amongst others, considers that of deformed pelvis. In reference to this point, he decides that this complication always requires the performance of premature delivery when the antero-posterior diameter of the pelvis is  $2\frac{1}{2}$  inches. Among other matter contained in the essay of M. Lacour, we may mention a table, by means of which we may determine the precise period at which premature delivery should be induced, according to the degree of pelvic distortion. When the diameter is 2 inches 7 lines, it should be at the twenty-seventh week; when 2 inches 8 lines, at the thirtieth; when 2 inches 9 lines, at the thirty-first; when 2 inches 10 lines, at the thirty-fifth; when 2 inches 11 lines, at the thirty-sixth; when 3 inches, at the thirty-seventh. [The table, which will, doubtless, strike the reader as arbitrary, has not even the credit of originality, as it is a precise imitation of that given by Ritzen.§]

5. *Abortion*.—M. Pettjean|| affirms that he has so frequently seen abortion produced during the exhibition of quinine in intermittent fever, that he has at length ceased to attempt the cure of that disease in pregnant women. In the prevention of miscarriage in women predisposed to the accident, Dr. Meigs strongly recommends the injection every night of a small quantity of fluid, containing forty drops of laudanum, into the rectum.¶ Dr. Radford concludes a paper upon the treatment of threatened abortion,

\* Ency. des Science Méd., Août., 1845.

† Gaz. Méd., No. 39.

‡ New Orleans Med. Journal, and Philadelphia Med. Examiner, April, 1845.

§ Vide Lectures on the Theory and Practice of Midwifery, by Dr. Lee, p. 371.

|| Gaz. des Hôpitaux, No. 97.

¶ Provincial Med. and Surg. Journal, Sept. 17, 1845.

by the following practical hints :—"The first duty," he observes, "in the treatment of abortion, is to make a careful vaginal examination, to ascertain the state of the cervix uteri. If its figure, size, thickness, and length, be normal, it is the duty of the obstetrician to adopt means to preserve the ovum, and to subdue the attendant symptoms; on the contrary, if we find the cervix uteri is shortened, partially or entirely distended, so that the figure of the uterus is changed, and is beginning to assume, or has assumed, the oviform state, the abortive process should be encouraged by every means in our power, having, at the same time, a due regard to those contingent circumstances which are attended with danger."\*

6. *Anormal Presentation.*—A case of head and foot presentation, which was remarkable for the several serious lesions which it presented, is reported by Dr. Doherty.† The author, after reviewing the treatment which is commonly recommended in similar rare cases, thus states his own opinion :—"The practice, he observes, to be adopted is to be determined by ascertaining which organ is most prominent; if the foot be more advanced, Denman's advice to grasp and bring it down is the best which can be followed; for if the part can be grasped, turning can in general be easily accomplished. If, however, the head be the more prominent presentation, it is better to keep back the foot so as to make the presentation a natural one. Sometimes, however, as the author remarks, the head and foot become firmly jammed in the brim; when, as it is impossible to alter the position, it becomes a nice question how to act. Dr. Doherty recommends, in the first place, that an attempt should be made to bring down the foot, and if this fails, to use the long forceps, if the child be alive; the perforator, if it be dead.

7. *Procidencia Uteri.*—A case is related in the "Southern Medical Journal," by Dr. Harden,‡ in which the entire uterus, at the full term of gestation, protruded through the os externum. The organ showing no disposition to assume expulsive action, the labor was completed by evisceration and manual extraction. [Examples of this accident are not of common occurrence, there being but one or two on record. One will be found in Dr. West's Report on Midwifery, &c. (Brit. & For. Med. Rev., April, 1844), and another in the "American Journal of Medical Sciences," vol. ix., extracted from a Dublin periodical. In both these cases the child was expelled by the natural efforts of the uterus.]

8. *Lacerations of the Uterus.*—The "Northern Journal of Medicine"§ contains the report of a remarkable example of this accident, in which the leg of the fetus was driven through the cervix by the force of the uterine pains. It became a matter of debate whether the band of muscular fibres, which intervened between the natural and artificial orifices, should be divided, but the idea was abandoned from fear of hemorrhage. Fortunately, an abatement of the uterine action soon ensued, when the accoucheur was enabled to pass the limb back through the neck, and to draw it down through the os uteri, and labor was then speedily completed.

A case of rupture of the body of the uterus occurs in the "Gazette des Hôpitaux," in which it is asserted, that the fœtus being distinctly felt to move in the abdominal cavity, the accoucheur in attendance immediately passed his hand through the rent and extracted it by the feet. During this proceeding, several loops of the intestine escaped into the vagina, but were replaced, and the woman did well. We cannot add that the above case is reported upon authority sufficiently high to take away from the *prima facie* incredibility of a fortunate result.

9. *Utero-vesical Fistula.*—The note|| at the foot of the page contains references to two cases of this rare and distressing accident, one of which is especially worthy of commemoration, on account of the simple but injurious process which was adopted for its relief. The case we allude to occurred to Mr. Harrison, and will be found briefly reported in the Abstract (Art. 83) ; as will there be seen, though a perfect cure was not established, the most complete relief to the symptoms was obtained by passing a skein of silk through the urethra into the bladder, and out of the vagina through the laceration. As inflammation was excited, thread by thread of the seton was withdrawn, until at length the fistula was so far diminished that no urine was observed to pass. The second case, described by Mr. Reed, was cured by the repeated application of the lunar caustic.

\* Translation of Colombat D'Isère on Diseases of Women, p. 593

† Philadelphia Medical Examiner, June, 1845.

‡ Provincial Med Journal, June 11; Lancet, Oct. 11, 1845.

§ Dublin Journal, July, 1845.

|| Extracted by the Lancet, Oct. 4. Medical Times.

10. *Vesico-vaginal Fistula*.—For this, see Report on Surgery (p. 196).

11. *Retained Placenta*.—In a highly useful series of papers upon the mechanism of uterine action, Dr. Clay, of Manchester, calls the attention of the reader to certain peculiarities in the manner in which the opposite portions of the uterus contract, in order to point out the best method of inducing expulsion of the placenta when that event does not readily take place. He shows that the two classes of uterine fibres, the longitudinal and the transverse, are essentially different in their action, and are excited by different causes, the longitudinal only being expulsive, the transverse having a dilating action. The exciting cause of the former class of muscular fibres he states to be irritation by pressure of the upper part of the vagina, and he therefore advises that, in retained placenta, the closed fist should be introduced, and pressure be made in imitation of that caused by the child's head. He gives an instance in which hour-glass contraction, a condition which is produced by inordinate action of the transverse fibres, was thus overcome, and the placenta liberated. The occasional retention of the placenta from its partial implantation in the fallopian tube, is commented upon by Dr. Payan. (Vide infra, p. 227).

12. *Uterine Hemorrhage*.—Few subjects connected with obstetrical science have created a greater sensation than the proposal of Drs. Radford and Simpson, to substitute extraction of the placenta, before the child, in certain cases of unavoidable hemorrhage, for the old-established rule of turning. It was not to be expected that a proceeding of so novel a character, and one so opposed to ordinary notions of correct practice, would be allowed to pass without criticism, and we accordingly find that it has met with the opposition of several accoucheurs of eminence, among whom we may mention Drs. Lee, Ashwell, &c. Of these, Dr. Lee has taken the most prominent part, having originated a controversy with Dr. Simpson, the heads of which we shall endeavor to reproduce.

In the first paper, published in the "Medical Gazette" of Sept. 19, and containing the details of eight successful cases of placenta prævia, Dr. Lee condemns the new practice in the strongest terms, not only as opposed to the principles derived from the anatomical relations of the uterus and placenta, and to the results of his own experience, but as not warranted even by the tables upon which Dr. Simpson has sought to establish the necessity for its adoption. This table Dr. Lee pronounces to be altogether fallacious, and adduces the evidence of Dr. Ramsbotham to show that Dr. Simpson has made the important error of mistaking the number of the infants lost for that of the mothers.

In reply to this communication, Dr. Simpson examines the objections of Dr. Lee *seriatim*.\* To the first of these, namely, that Dr. Lee sees no necessity for departing from the established rule of practice, he objects that if the result of the eight cases detailed by Dr. Lee was the expression of the real average of maternal danger, he should be the last to propose an alteration; but in order to show that such is not the case, he takes 61 cases which occurred to Drs. Lee and Ramsbotham, in which turning was adopted. Of this number, 24 mothers, or 1 in 24, were lost, a mortality which, as he observes, is equal to that of the Cæsarean operation. In answer to the accusation of Dr. Lee, that he (Dr. S.) advises extraction of the placenta in preference to turning, in all cases indiscriminately, Dr. Simpson replies that such is not the fact, but that he recommends the practice only under the following circumstances: In severe cases of unavoidable hemorrhage, complicated with a rigid and undilated os uteri, in which turning would be either impossible or hazardous; in most primiparæ; in unavoidable hemorrhage, with premature labor, and an undeveloped condition of the os and cervix; in placenta presentations with distorted pelvis; in cases where the extreme exhaustion of the patient forbids turning, and when the fœtus is ascertained to be dead, or is premature, and not viable. In support of these views of the necessity of the new proceeding, eleven cases are quoted from Dr. Lee's own practice,† in which unavoidable hemorrhage was complicated with rigid and undilated os uteri. Of these eleven, three mothers only survived, and of these, two very nearly perished. Dr. Lee's third objection to extraction of the placenta, that it was not adopted by the older accoucheurs, is met by Dr. Simpson with the very obvious plea, that if any novel practice is to be condemned, simply because it was not thought or approved of by the ancients, there would be at once an end to all improvement. Dr. Simpson also demon-

\* Med. Gazette, infra.

† Med. Gaz., Nov. 7.

states the error of Dr. Lee in asserting that Portal, one of the old authors referred to, never attempted to detach the placenta in any case, by quoting that author's own words, in which the fact of his having abstracted the placenta before the child is unequivocally expressed. Dr. Lee's fourth objection is one which apparently carries great weight, being this—that by the new practice the child must inevitably be sacrificed. To this Dr. Simpson replies that, according to Dr. Lee's own showing, 65 per cent. of the infants perished under the operation of turning, in actual numbers 15 out of 23 in which the result is mentioned; while of 106 cases previously reported (Lond. and Edin. Monthly Journal, March, 1845), in which the placenta was spontaneously expelled before the child, 31 per cent. were saved, so that in this respect there is too little difference in mortality, to found an objection upon. "Besides," says Dr. Simpson, "the cases in which extraction of the placenta is to be advised, are exactly those in which the fœtus may be expected to be lost under any mode of treatment."

In answer to Dr. Lee's objection, upon the score of inaccuracy, Dr. Simpson refers the reader to a series of letters from Dr. Ramsbotham and Dr. Lee, which show that inaccuracies have crept into the statements of both parties, and that in this respect Dr. Lee is not less chargeable than his opponent.

The subsequent number of the same journal contains an additional paper by Dr. Lee, in which 89 cases by Dr. Merriman, and 19 by Giffard, are tabulated. In the former of these there is evidently a mistake; 59 mothers out of 78, in which turning was adopted, being represented as having perished; while Dr. Merriman expressly states that he lost only 19; the numbers should clearly be reversed, but even this would make a maternal mortality of 1 in 4, not much short of that asserted by Dr. Simpson. In the 19 cases related by Giffard 5 died, also about 1 in 4, but these, Dr. Lee observes, perished from loss of blood prior to turning, and not in consequence of that operation.

It must be obvious, from the above imperfect abstract of this important controversy, that neither party is exactly in a condition to establish his position; statistical data, of *undoubted* accuracy, being absolutely necessary for so doing. Looking, therefore, upon the question as one still undecided, we shall proceed to mention the opinions of other writers as to its feasibility, and to record the individual experience of those who have adopted the practice of Dr. Simpson.

Dr. Ashwell\* expresses his doubt of the correctness of Dr. Simpson's assertion, that the maternal deaths under the operation of turning in unavoidable hemorrhage are as high as 1 in 3. He states that in his own practice, he has lost only 2 out of 20; and that in the practice of the lying-in charity of Guy's Hospital, 2 cases in 14 only proved fatal. This writer also questions the fact upon which, as we have before said, Dr. Simpson bases the propriety of his operation, viz., that the blood in hemorrhage from placenta presentation comes from the detached placenta. He shows satisfactorily that Dr. Lee is correct in denying the possibility of such an occurrence, as, in the first place, the decidual vessels are too small to allow of the terrific gushes of blood which are witnessed in this form of hemorrhage, and, moreover, that in consequence of the cellular structure of the placenta, its meshes become almost necessarily plugged by coagulated blood. As regards the new practice, Dr. Ashwell observes that it rarely requires to be employed, and never can be without risk to the mother, and certain death to the child. He thinks that in all cases in which the placenta could be safely removed, a little patience would also accomplish sufficient dilatation of the os uteri to admit of turning.

An opinion similar to the above is also expressed by Mr. Crowfoot,† who has been fortunate enough not to lose a single patient in eleven cases of turning under unavoidable hemorrhage. Of the infants 4 perished. In 2 other cases, however, in which, from the quantity of blood lost, the fœtuses were evidently dead, Mr. Crowfoot admits that he should have advised extraction of the placenta had he been aware of its effect upon the hemorrhage. Mr. Newnham,‡ of Farnham, likewise offers a somewhat qualified opposition to the practice, thinking it advisable in some cases where it may be necessary to diminish the size of the head in consequence of deformed pelvis; objecting to it as a general rule. [It must, however, be remembered that neither Dr. Simpson nor Dr. Radford contends for its general operation.]

The periodical press during the last six months contains several cases in which the new

\* Med. Gaz., Nov. 7.

† Prov. Med. Journal, Nov. 13

‡ Med. Gaz., Nov. 14.

practice has been successfully adopted as regards the mother. The principal of these, to which the references will be found below,\* are as follows: Two cases by Messrs. Wilkinson and Tennent; one by Mr. Greenhow; one by Mr. Jones, of Llanfair; one by Mr. Parker, of Bridgewater: one by Mr. Walker, of Chesterfield (in this case hemorrhage ceased as soon as the placenta was removed, but turning was subsequently necessary; two cases by Mr. Favell, of Sheffield, in which the placenta was spontaneously expelled without hemorrhage; one by Dr. Maclean; one by Mr. Hutchinson; one by Mr. Hiclings, in which he believes that the earlier abstraction of the placenta would have prevented the alarming hemorrhage which had occurred; and, lastly, one by Mr. Wells.

The subject of accidental uterine hemorrhage has been brought before the profession by Mr. Adams, of Banchory. The views of the writer as to the source of its hemorrhage are greatly at variance with generally received opinions, as will be seen from the following conclusions:†

"1. That the doctrine generally taught, namely, that in floodings after delivery the blood escapes by exudation from the placental vessels of the uterus, is founded on a mistaken hypothesis regarding the construction of the placenta; while the symptoms of the case which were supposed to uphold the doctrine of uterine torpor, that is to say, the flaccidity of the womb when felt externally, and its distension and relaxation as discovered by the introduction of the hand, are to be regarded as the effects, and not the causes, of the flow of blood.

"2. That all the phenomena of the case are satisfactorily accounted for upon the supposition that the hemorrhage proceeds from lesions which are proved to be of no uncommon occurrence, about the uterus and perineum after delivery, but that analogy would lead to the conclusion that they sometimes proceed simply from violent action of the uterine exhalants.

"3. That there is no reason from analogy to suppose that blood would flow from an organ or member, merely because it is in a relaxed state, provided it had sustained no solution of continuity.

"4. That it has been demonstrably proved that contraction of the uterus is no safeguard against flooding, and that flooding is not necessarily the consequence of non-contraction after delivery.

"5. That the facts and circumstances connected with the Cæsarean operation, and the removal of the placenta in inertia of the womb, militate strongly against the established opinion, that flooding is apt to arise from the non-contraction, or sudden emptying, of the womb.

"6. That, beyond all dispute, instrumental and precipitate deliveries are those in which floodings are of the most frequent occurrence; and it is well ascertained that lacerations are common in both these cases.

"7. That the introduction of the hand into the uterus, with the intention of stimulating the organ, or compressing the bleeding point, is a practice highly dangerous, tending to produce increased determination of blood to the part, syncope, and convulsions; and that the only circumstance which could justify the most gentle modification of this practice is the existence of a coagulum in the vagina or womb.

"8. That, agreeably to my own experience, laying the head low, exposing the patient to a current of cool air, applying cold cloths to the parts, with small doses of opium and gentle compression of the abdomen, are means which will rarely fail to arrest the flow of blood; but that in extreme cases it may be warrantable to try to ascertain the situation of the bleeding point, and secure it by surgical means.

"9. That, as far as can be ascertained, fatal results under this mild system of treatment in former ages were of much more unfrequent occurrence than they have been under the harsh mode of treatment pursued for some time past.

"Finally, that the flooding which follows delivery has none of the characters of a passive hemorrhage, as has been generally taught of late, but is to be referred to the class of active hemorrhages, and treated upon the principles applicable to them."

[We transcribe the above remarks because it is our duty to record the opinions which may be put forth during each semestrial period, not because we consider them

\* *Prov. Med. Jour.*, July 13; *Ib.*, Sept. 3; *Ib.*, Sept. 10; *Ib.*, Sept. 17; *Ib.*, Sept. 24; *Med. Times*, Oct. 4; *Northern Journal of Medicine*, and *Med. Times*; *Prov. Med. Journal*, Oct. 15; *Med. Gaz.*, Sept. 26; *Lancet*, Nov. 8.

† *Med. Gaz.*, Aug. 29, 1845.

as worthy of confidence. It appears to us, on the contrary, that the smallest experience in flooding after delivery must be sufficient to prove their fallacy. Dr. Rambotham and Mr. Copeman\* have both signified their dissent from them.]

The occasional dependence of uterine hemorrhage upon partial development of the placenta within the fallopian tube, is demonstrated by Dr. Payan,† who relates two cases in point, one of which proved fatal. In this instance, prolongation of the placenta was found to have occupied an inch and a half of the tube, which had undergone a funnel-shaped dilation to the extent of three and a half inches in circumference. It would appear from M. Payan's observations, that the development of the placenta in this situation, excepting in cases of extra-uterine pregnancy, has not met with much attention, Riëcke and D'Outrepoint being the only writers who have noticed it. Both of these authors consider the circumstance to be a not unfrequent cause of abortion in the early months of gestation, and that it occasionally produces that retention of the placenta which is generally attributed to irregular contraction of the uterine fibres. As the attention of the practitioner is not likely to be drawn to the existence of this form of abnormal implantation of the placenta, it generally remains undetected until labor is completed. It may, however, be suspected, observes M. Payan, if after the uterus has contracted, and a portion of the after-birth has been expelled, a soft tumor be discovered in the region of the uterine insertion of the fallopian tubes. The development of the placenta in this situation is considered by the author to be more common than is generally suspected, as in slight attachment the tubal portion may be readily expelled into the uterine cavity, and thus escape detection.

In the treatment of uterine hemorrhage, Mr. Cleveland‡ has successfully applied galvanism as recommended by Drs. Hæniger and Jacoby,§ and Dr. Radford. Mr. Higginbottom|| and Mr. Blacklock¶ have seen considerable advantage from ipecacuanha and mustard in emetic doses. Dr. Eber's essay on the powers of ergotin, to which we alluded in our last Report, is in the course of translation in the "Medical Gazette."\*\*

13. *Operative Midwifery.*—Cæsarean section. Two successful cases of this operation have recently occurred: the first will be found described in the "Revue Médicale;" the second, in which both mother and child recovered, appears in the "Gazette Médicale" of Sept. 13. An unsuccessful case, in which the abdomen was laid open for the extraction of the fetus after rupture of the uterus, has already been mentioned. (89.)

14. *New Obstetrical Instrument.*—An instrument, called a *crochet-scie*, has been invented by a M. Van Eecken, for the purpose of decollation or dismemberment of the fetus in cases of narrow pelvis. In form it resembles the ordinary crotchet, with the exception that a second limb is made to unite with the extremity of the curve after it has been applied; both stems are hollow, and allow of the play of a chain-saw, the teeth of which project from the under surface of the curved portion of the instrument. The saw is worked by alternate traction exerted at the base of each handle. For a more minute description of the instrument and its uses we refer the reader to the "Encyclographie des Sciences Médicales" for August, where he will be assisted in comprehending its mechanism by a series of drawings.

15. *The Puerperal State. Convulsions.*—In a memoir recently presented to the Société de Médecine d'Anvers,†† M. Léva endeavors to separate true puerperal eclampsia from other convulsive affections, as epilepsy, &c., which may occur during pregnancy or labor. The symptom which he considers to be strictly diagnostic of the puerperal convulsion is the persistence of coma between the intervals of convulsion; if the patient either does not entirely lose her consciousness during the fit, or recovers it in the intervals, the author does not regard her as laboring under true puerperal eclampsia. The proximate cause of the disease M. Léva considers to be that condition of blood said to exist in pregnancy in which the fibrin is more abundant than natural. This, he observes, tends to the production of cerebral congestion. In the treatment of the paroxysm he is strenuously opposed to artificial delivery, and places but little confidence in blood-letting; his chief reliance is upon mercury, which he exhibits upon the grounds that it liquifies the blood, and diminishes the proportion of fibrin. [We may be allowed to remark, in respect both to the cause and treatment of the disease as

\* Med. Gaz., Nov. 7.

† Edin. Month. Journal, Nov., 1848.

‡ Med. Gaz., June 27, 1845.

§ Neue Zeit. f. Geburtsh., bd. xvi., heft 3, in Dr. West's Report. British and Foreign Med. Review, Oct., 1845.

|| Lancet, June 20.

¶ Ib., July 5, 1845.

\*\* Nov. 14, et seq.

†† Gaz. Méd., No. 30, 1845.



here stated, that the author's theory is not supported by fact. In the first place MM. Andral and Gavarret give only 4 and a fraction as the quantity of fibrin in pregnancy; Becquerel and Rodier, 3 to 4; while in rheumatism and other phlegmasiæ, the proportion rises as high as 6, 8, and 10, without giving rise to convulsive symptoms. Again, as regards the effects of mercury upon the proportion of fibrin, so far from being diminished by it, Andral found it increased during salivation, being in one case 4, and in others 6.]

16. *Puerperal Fever*.—A full account of an epidemic of this disease, which has recently appeared in several of the Parisian hospitals, has been furnished by MM. Bidault and Arnould.\* The symptoms generally declared themselves on the third or fourth day, commencing in every case with rigors, followed by heat of skin, and a pulse ranging from 110 to 120, and of variable strength. The other ordinary symptoms were headache, injection of the eyes, loaded tongue, laborious breathing, pain in the abdominal region, bilious vomiting, and diarrhœa, or obstinate constipation. The lochia were in all cases diminished or suspended, as was likewise the secretion of milk. Under the influence of blood-letting, which was in some cases adopted at the Hôtel-Dieu-Annexe, all the symptoms of reaction subsided, the features became pale and contracted, the eyes sunk, the lips became livid, and the most extreme feeling of anxiety supervened. The abdominal pains were diminished, but the abdomen became so tympanitic as to add considerably to the difficulty of breathing. Death usually occurred before the fifth or sixth day, with every symptom of low typhus. In some cases bronchitis formed a serious complication; in others papular spots, similar to those observed in typhoid fever, made their appearance. The post-mortem appearances were as follows:—The uterus was flaccid and voluminous, and lined with fetid and sanious false membranes; the muscular tissues and the veins were unaffected, but the lymphatics were distinctly seen to be filled with pus; in some cases the diseased lymphatics were confined to the uterus; but in others, those of the appendages were involved. At the Hôtel-Dieu and the Hôtel-Dieu-Annexe, where symptoms of peritoneal inflammation predominated, alterations of that membrane were found correspondingly frequent. The peritoneal cavity contained a purulent serosity, in which fibrinous flocculi were seen floating. At the Hôpital St. Louis, where the typhoid symptoms were most developed, the peritoneal membrane was unaltered; but there was extensive purulent infiltration of the pelvic cellular tissues. The liver was healthy in all cases, as was likewise the spleen. The lungs exhibited no alterations beyond the hypostatic congestions common to low fevers. There were no purulent deposits; but pus was sometimes found in the pleural cavities. The blood exhibited the dark semi-coagulated appearance seen in typhoid fever. There was no particular lesion of the nervous system.

No appreciable cause for the outbreak of this epidemic could be discovered, either in the state of the atmosphere or other surrounding circumstances. The epidemics, however, all occurred in the cold months. The disease did not appear to originate in over-crowding of the patients, as at St. Louis the number was less than usual. It is nevertheless worthy of notice, that of 67 women delivered in the obstetrical ward of the Hôtel-Dieu-Annexe, 1 in 5 died; but of 21 distributed promiscuously among the female wards, a single case only was lost. This fact, as the reporters justly acknowledge, is an evidence of the impropriety of accumulating patients laboring under this and similar diseases. The disease was thought to be contagious; but no mention is made of the consentaneous appearance of erysipelas. The patients attacked were generally those of feeble constitution, and unable to nurse their infants.

The treatment adopted in these epidemics was for the most part unsuccessful. General bleeding was invariably prejudicial; local bleeding, though not productive of injurious effects, appeared of little use. The author speaks favorably of repeated warm injections, per vaginam, for the purpose of removing the sanious discharges. The patients, two in number, saved by M. Tessier, at the Hôtel-Dieu, were treated by leeches and fomentations, followed by mercurial frictions, and the internal exhibition of the tincture of aconite.

Some epidemics, of a similar character, which occurred at Rennes in the years 1842 and 1844, are described by M. Botrel.† As in the disease above mentioned, the lymphatics were chiefly implicated, for which reason the author called the affection an

\* Gaz. Méd., No. 31, and Encyclographie des Sciences Méd., Août, 1845.

† Revue Méd. and Archives Gén., Juin, 1845.

*angio-ecutè puerpérale*; the veins were not in any case involved. These epidemics, however, differed from the former in the frequent occurrence of purulent deposits in the lungs; the author believed the disease to depend upon atmospheric causes; but refuses to admit the influence of defective ventilation. The disease terminated with typhoid symptoms, in some cases in forty hours, but generally not before the fifth day. The mortality in the first epidemic was 20 in 24; in the second, 20 in 22. In the cases which recovered, local and general bleeding, purgatives, and mercurials were employed. M. Botrel distinctly states that general bleeding was only admissible in the very onset of the disease. Turpentine was found to be positively injurious.

In his description of an epidemic puerperal fever, which prevailed at Buffalo, New York, Dr. Flint\* maintains the following two prominent propositions:—1, that the disease is an essential fever, and not a merely modified form of peritonitis or metritis; and, 2, that it is a fever having a close analogy with that of erysipelas. In corroboration of the latter, at the present time somewhat prevalent opinion, the author narrates the following case. Two ladies were in incessant attendance upon a friend who died of puerperal fever. In the course of three days they were both taken ill, one with severe erysipelas, the other with premonitory symptoms of the same disease, and which were fortunately dissipated by the action of an emetic. A laboring woman, who was employed to wash the clothes of the same patient, having received a slight scratch on the hand while so doing, was attacked with erysipelatous inflammation of the absorbents, and died after a short illness. The latter case is strongly confirmatory of the axioms laid down by Mr. Storrs, and mentioned in our last Report (vol. i., p. 243).

M. Colombat d'Isère† speaks of puerperal fever under two forms, that of puerperal peritonitis and uterine phlebitis; but his accounts of both are very short and imperfect. In the treatment of both forms he, as well as his translator and commentator, Dr. Meigs, lays greater stress upon the inflammatory origin than would be thought prudent in this country, and general and local bloodletting are consequently employed with a boldness which the British practitioner would justly condemn.

17. *Puerperal Ophthalmia*.—The recently published volume of the "Transactions of the Medico-Chirurgical Society,"‡ contains a paper by Dr. Robert Lee, in which the connexion of the inflammation of the eyes in childbed women, with phlebitis of the uterine veins, is clearly traced. It is obviously, as the author observes, to be placed in the same category of diseases, as the pneumonic abscesses, purulent effusions into the joints and other parts, observed to coincide with the more fatal forms of puerperal fever.

18. *Melancholia Puerperalis Attonita*.—Under this somewhat fanciful title, two cases have been described, one by Dr. Lion,§ the second by Mr. Image.|| The affection appears to be nothing more than the effects of severe mental shock upon the nervous system, at that time in an unusually susceptible condition. In the first case the exciting cause was excessive horror, occasioned by the mother overlaying her infant; in the second, the symptoms were occasioned by the sudden news of the husband's bankruptcy. The symptoms in both cases were an expression of blank despair, conjoined with great and increasing prostration of strength, the consciousness remaining intact. Both cases proved fatal within 48 hours of the accession of the symptoms.

19. *Excoriation of the Nipples*.—The common opinion that this painful state of the breast arises from the violence sustained by the part in the act of suckling, is denied by Dr. Rossi,¶ who has paid great attention to the subject. This author has found that, even in cases of retracted nipple, where unusual violence has been exerted, that the painful excoriation never appeared except in connexion with the presence of aphthous ulceration in the infant's mouth. That this is the real cause of the affection, he has proved by the application of children laboring under aphthæ to healthy nurses, when fissures of the nipple have been the consequence. It follows from these views, that the cure of the complaint depends as much or more upon attention to the state of the infant, as to that of the mother. He recommends, therefore, alterative medicine to the infant, conjoined with slightly astringent washes to the mouth. Precaution should also be taken to wash the bosom carefully after each suckling.

20. *Puerperal Osteophyte*.—In our last Report (vol. i., p. 245), we alluded to the re-

\* New York Journal of Medicine, in Med. Times, Nov. 23, 1845.

† Treatise on Diseases and Special Hygiene of Females, translated by Dr. Meigs, p. 600.

‡ Vol. x., Second Series.

§ Casper's Wochenschrift, 144.

|| Med. Gazette, June, 1845.

¶ Annali Universali, in Gaz. Med., Sept. 20, 1845.

searches of M. Ducrest upon the remarkable bony growth which is found to line the internal table of the cranial bones in women dying in the puerperal state. With the object of continuing these researches, M. Moreau\* has examined the heads of 98 women who died in childbed at the Maternité. Of this number the osseous concretion alluded to was found under different degrees of development, in 4 out of 42. It appears that the phenomenon is confined to the cranium, as this observer failed to detect it in the pelvis or other flat bones. The appearance was found to present itself in three different degrees: in the first, the internal table of the skull exhibited scattered spots of a darker color than usual, and allowing of being readily scraped off with the nail. In the second degree these spots were more extended, and contained numerous small ossific points, and adhere to the subjacent bone, but not to the dura mater. The third degree consists merely in the coalescence of the spots, so as to form an ossific lamina of greater or less extent. M. Moreau throws no light upon the pathology of this curious appearance.

21. *Statistics of Midwifery.*†—"These statistics are founded on 5547 deliveries, occurring in the private practice of Professor Campbell. The oldest parent among the males was 77 years of age. There were in all but 5 male parents below the age of 20; 4 at 18 and 1 at 19. Among the mothers 2 were delivered at the age of 50; 3 at 47; 9 at 46; 15 at 45; 20 at 44; 21 at 43; 37 at 42; 28 at 41; 124 at 40; 153 at 39; 87 at 38; 35 at 37; 7 at 36, and 2 at 35. Of the whole number of female parents referred to, each of 31 mothers produced 12 children, 14—13, 5—14, 1—15, and 3—16 children.

"In 5754 deliveries, 2901 were male children, 2219 female; the sex of the remainder was not recorded.

"There were 400 first deliveries (244 of males and 160 of females), including three twin births.

"In 116 illegitimate births there were 65 male and 52 female births.

"By 153 males and females of equal ages, 318 male, and 245 female children were procreated.

"By 340 fathers, from 3 to 6 years older than their wives, 795 males, and 351 females, were produced.

"By 143 fathers, from 7 to 10 years older than their wives, 366 males, and 289 females, were produced.

"To 112 fathers, from 11 to 36 years older than their wives, 267 males, and 194 female children, were born.

"To 117 husbands, from three to 17 years younger than their wives, 285 males and 214 females were born.

"In 1310 labors, extending over a period of four and a half years, the head presented in 1244 births, (face to right ileum in 977 cases, to the left in 263)."

## § II.—Diseases of Women unconnected with Pregnancy.

22. *Inflammation of the Os and Cervix Uteri. Leucorrhœa.*—The valuable lectures of Dr. Henry Bennett, of London, which we had occasion to mention in our last Report, have since been laid before the public in a separate form,‡ and cannot be too strongly recommended as a practical guide to the treatment of this important class of female ailments. The assertion of the author therein contained, that a persistent leucorrhœa in adult females, who have been exposed to sexual intercourse, is in the great majority of cases dependent upon an inflamed and engorged, if not ulcerated condition of the neck of the womb, has recently been confirmed by the observations of Dr. Roberts.§ Fifty-nine cases were adduced by this author, in all of which the leucorrhœal flux was symptomatic of some form of inflammatory lesion of the os and cervix uteri. In forty-six of these cases those parts were either swelled, red, livid, or granular; in two or three only did the membrane exhibit its natural color. In thirty-three cases ulceration existed, and in forty the discharge was seen to issue from the os tincæ. Dr. Roberts denies that leucorrhœa ever depends upon simple atony of the vaginal membrane, or that the discharge alone is the cause of the debility which so

\* Bulletin de la Société Anatomique. Encyclographie Méd., 1845.

† Northern Journal of Medicine, June; and Lancet, July 5, 1845.

‡ Practical Treatise on Inflammation and Ulceration of the Neck of the Uterus.

§ New York Jour. of Med., and Lancet, Oct. 22.

often attends it. He agrees with Dr. Bennett, that the use of the speculum is absolutely necessary for the cure of many of these distressing cases.

M. Gibert,\* one of the physicians to the hospital of St. Louis, has introduced a new form of astringent vaginal injection for the cure of leucorrhœal discharges, to which he has given the name of the "Alcoholic extract of tannin." M. Devay† treats the complaint by repeated applications of the solid nitrate of silver. His method consists in passing the caustic, with the aid of the speculum, lightly over the whole extent of the mucous membrane, from the cervix to the os externum, repeating the operation every four or five days. This proceeding is identical with the practice of M. Ricord, and was long since recommended by Dr. Jewel. (Vide *Encyclopæd. Pract. Med.*, art. *Leucorrhœa*.)

23. *Retroversion of the Uterus*.—A case is recorded by Mr. Mann,‡ in which the displacement of the unimpregnated uterus was apparently caused by a distended state of the colon, and obstinately resisted all attempt at reduction, until the lower bowels were emptied by means of Dr. O'Beirne's enema tube, after which the organ spontaneously recovered its position. [The agency of distended and superposed intestines in producing this accident is distinctly acknowledged by M. Lacroix. (Vide Abstract, vol. i., p. 240.)]

Dr. Rigby,§ in a report upon this displacement, states his belief that it occurs more frequently in the unimpregnated womb than is generally suspected, existing frequently in slight degrees without giving rise to any very distinctive symptoms. He speaks highly of the uterine sound of Dr. Simpson as a means of discovering the displacement, as well as the uterine supporter invented by the same gentleman.

24. *Inversio Uteri*.—The last volume of the "Transactions of the Provincial Medical and Surgical Association"|| contains the first part of a most comprehensive and learned essay upon this displacement, by Mr. Crosse of Norwich. The different degrees to which the accident may proceed are described under the four terms of depression, introversion, perversion, and total inversion. The first, or lowest degree, consists in the simple depression of the fundus, after the resemblance of the bottom of a bottle; introversion, of a more extensive falling in of the fundus, but short of protrusion from the os uteri. The term perversion is intended to express the escape of the fundus from the os, without inversion of the cervix, and total inversion implies the inversion of the cervix as well as the rest of the organ. Inversion of the womb is considered both as it occurs after parturition, and in conjunction with polypus, and under each department is illustrated by diagrams and plates which materially enhance the value of the communication.

Dr. Meigs¶ states he has met with positive evidence to show that the inverted uterus may in some rare instances become spontaneously restored to its natural state; two cases are given which, if the diagnosis was correct, render the supposition indubitable, as in each instance a subsequent pregnancy took place.

A case of successful extirpation of the inverted uterus by incision, is recorded in the "Journal de Médecine de Montpellier," Juin.\*\*

25. *Urethral Polypus*.—The growth of polypi from the mucous surfaces of the female urethra forms the subject of a thesis by M. Bavoux.†† They are divided by the author into external and internal. The external polypus, which is by far the most common, generally springs from the posterior wall of the canal, close to the meatus urinarius, from which it eventually makes its exit. The size of these growths varies from that of a pea to that of a cherry; their color is of a vivid red, and they sometimes bleed upon the slightest touch. The author states that they give rise to no pain in some cases, in others they excite violent pain in passing the urine, and in the sexual act. The internal polypus originates in the same manner, and is often unsuspected until it presents itself externally. In the treatment of these polypi the author places no confidence in topical astringents, the only certain cure is extirpation with the knife or ligature.

26. *Uterine Polypus*.—M. Lisfranc‡‡ advises the application of the "acid nitrate

\* *Gaz. Méd.*, Mai, 1845.

† *Lancet*, Oct. 22.

‡ Vol. i., New Series.

§ *Gaz. Méd.*, Oct. 18, 1845.

|| *Gazette des Hôpitaux*, Mai, 1845.

¶ *Gaz. Méd.*, No. 26, and *Encyclograp. Méd.*, Juillet, 1845.

‡ *Med. Times*, Nov. 8, 1845.

¶ Note to Translation to Colombat, p. 183.

†† Reviewed in *Archives Gén.*, Sept., 1845.

of mercury" as a caustic for the suppression of hemorrhage in cases where neither excision nor ligature can be employed. M. Lenoir and M. Malgaigne\* both relate cases in which a vaginal examination in this disease was followed by fatal peritonitis.

### § III.—Diseases of Children.

27. *Asphyxia Neonatorum*.—The causes of infantile asphyxia are stated by Dr. Clay,† of Manchester, to be as follows: Pressure on the cord during parturition; pressure on the head; plugging of the respiratory passages by mucus; too early division of the cord; constitutional debility; and lastly, ergot of rye, given in substance; the infusion, he observes, has not the same deleterious effect. The subject of artificial respiration in infantile asphyxia is considered at length by M. Depaul,‡ but this article contains little worthy of mention. The precautions which he recommends in performing the operation are judicious, but are such as would be adopted by every careful practitioner. He denies that there is any risk of producing emphysema of the lungs, unless more than usual force is given to the insufflation of air.

28. *Edema Neonatorum*.—This disease has recently been investigated by M. Roger,§ in reference to the condition of the temperature of the body. The result of his inquiries seems to be, that there is no disease in which animal heat is so uniformly and steadily diminished as the one in question, and thus the diminution is in strict correspondence with its severity. He gives a table consisting of twenty-nine observations, which may be thus recapitulated:

In every instance, without exception, the thermometer placed in the axilla indicated a temperature lower than the normal mean standard in infants of the same age (37°-08 cent.). In nineteen cases it descended to 33°, in seven to 29°. No circumstances appeared to exercise any control over the refrigeration of the body; it progressed with the disease in spite of the means most likely to oppose it. Such, indeed, is the constancy of the phenomenon, that M. Roger regards it as a certain means of prognosis. If the thermometer falls from day to day, the disease, according to his experience, assuredly proves fatal; if it ascends a degree or two, it affords grounds for hope. The author does not attempt to explain the connection between the low temperature of the body and the serous infiltration of the cellular tissue. In reference to treatment, he calls attention to M. Chossat's brutal experiments on the effect of starvation upon animals, and deduces from them the conclusion that nutritious food would have more effect in restoring the temperature of the body than any external applications.

29. *Cephalhæmatoma*.—Observations upon this somewhat rare infantile disease are furnished by Dr. West,|| and Messrs. Kesteven, Rose, and Audland.¶ Dr. West's case was one both of external and internal cephalhæmatoma, and is chiefly remarkable from the fact, that a process of reparation having commenced internally, similar to that which is observed on the external table of the skull, and which, as in Mr. Kesteven's case, often gives rise to the groundless fear that a deficiency in the cranial bones exists; the infant died (at the end of three weeks) from convulsions. In the second case alluded to, the tumor was unusually extensive, and appeared the day after the infant's birth. It remained stationary for six weeks, when absorption commenced, and three or four days sufficed for its entire removal. Mr. Rose's case was, in every respect, similar to that related by Mr. Kesteven, and was likewise spontaneously cured. Mr. Audland describes two cases, which, in situation and symptoms, resembled the above; one was punctured, under the idea that it was an encysted tumor containing serous fluid. It was then, as was the other case, treated by evaporating lotions, and both speedily recovered.

The usual termination of internal cephalhæmatoma is fatal. Of eight cases, the details of which have been collected by Dr. West, two were still-born; one died on the fifth day, two on the ninth, and two on the twenty-first; in one the date of death is not mentioned.

30. *Cranio-Malacia*.—The peculiar softening of the occipital bone, which was described under this name a few years since by Dr. Ellisæsser, has been subsequently noticed by Dr. Widtmann.\*\* This writer agrees with its first observer in considering

\* Ib. in *Lancet*, July, 1845.

† *Journal de Chirurgie de M. Malgaigne*, Juin, 1845.

‡ *Med. Chirur. Trans.*, vol. xxviii.

\*\* *Medizinische Corresp. Blatt*, in *Encyclographie der Sciences Méd.*, Mai, 1845.

§ *Med. Times*, Aug. 16, 1845.

¶ *Archives Générales*, Mai, 1845.

|| *Med. Gaz.*, Oct. 17, and Nov. 14, 1845.

the affection as a form of rachitis, and gives the following description of the symptoms: The child is, at first, remarked to be restless and uneasy, rubbing its head continually against the pillow. After an interval of longer or shorter duration, tetanic rigidity of the muscles ensues, together with spasmodic dyspnoea, resembling laryngismus stridulus. The disease generally occurs between the age of three and six months, and is most effectually treated by chalybeates and nutritious diet. Dr. Widtmann relates nine cases of laryngismus stridulus, in all of which this peculiar condition of the occipital bone was observed.

31. *Pathological conditions of the Milk a cause of infantile disease.*—A correspondent of the "Medical Gazette" invites attention to this too much neglected subject, adducing the experiments of M. Donné in regard to the microscopic characters of good and bad milk. Several cases are detailed which occurred to M. Girard, in which a wasting diarrhoea, with aphthæ, was entirely owing to the diseased condition of the milk, and resisted all treatment until a healthy nurse was obtained.

32. *Pertussis.*—In the treatment of this disease, the endermic use of morphine is strongly recommended by M. Berndt;\* an infusion of the leaves and flowers of the potato by M. Reichnelt;† and the vapor of tar by Mr. Waddington.‡ M. Berger,§ of Berlin, considers the employment of moderate antiphlogistics always necessary in the first instance, and afterwards relies upon ipecacuanha or tartar emetic, evidently regarding the disease as a form of bronchitis. He has little faith in any of the class of antispasmodics, having tried opium, morphine, belladonna, hydrocyanic acid, the hydrocyanates of iron and zinc, assafoetida, tobacco, and the sedum palustre, without finding the paroxysms mitigated by any of them. Not so, however, of the nitrate of silver, of which the author speaks in high terms of commendation, stating that he has seen it, in the dose of one-twelfth of a grain three times a day, of unquestionable utility.

M. Bouchut|| points out a fact which has frequently been noticed; viz. that the occurrence of febrile disturbance, during the course of whooping-cough, occasionally suspends, or entirely cures the cough.

33. *Diarrhoea.*—M. Bouchut|| distinguishes three forms of infantile diarrhoea: 1, That depending upon a simple increase of the peristaltic action of the bowels; 2, That which originates in a catarrhal state of the mucous membrane; 3, That which results from inflammation. The latter form is the most important, being frequently fatal in children of a weakly constitution, or in those which have been exhausted by previous illness. It declares itself by restlessness, loss of appetite and irritability of the stomach, and feculent diarrhoea. As the disease progresses the child emaciates, the mouth becomes dry and aphthous, and the diarrhoea increases, the evacuations becoming strongly acid. The infant speedily passes into a fatal typhoid condition. The treatment adopted by M. Bouchut consists in a change of nurse if it be at the breast, and restoring it if it has been weaned. In addition to this he places great faith in emetics of ipecacuanha. As an astringent he prefers the nitrate of silver in the dose of 1-6 of a grain.

\* Canstatt Jahrbuch, 7 Cahier.

† Lancet, June 21, 1845.

‡ Manuel Pratique des Maladies des Nouveau-Nés, &c.

§ Gaz. des Hôpitaux, Août, 1845.

|| Encyclograp. des Sciences Méd., Juillet, 1845.

¶ Op. cit.

# IV.

## REPORT ON THE PROGRESS OF ANATOMY AND PHYSIOLOGY.

BY W. S. KIRKES, ESQ., M.R.C.S.

### § 1.—*The Blood.*

1. *Development of Blood-corpuscle.*—From some investigations into the mode of development of blood-corpuscle in various classes of animals, Mr. Wharton Jones\* concludes that the changes in development undergone by these corpuscles are exactly the same in the blood both of vertebrate and of invertebrate animals, with the exception that in the invertebrata the corpuscles attain their full perfection, and stop short, before arriving at the stage of the red corpuscle which is common to the blood of vertebrate animals. In this view Mr. Wharton Jones is confirmed by Mr. G. Newport.† In the blood-corpuses of the crab Mr. Jones was able to detect a very appreciable quantity of iron.

2. *Milky Serum.*—Dr. Buchanan,‡ having continued his researches on the effects produced by food on the blood, finds that the milkiness of the serum (which frequently, if not invariably, occurs after taking food) may commence as early as half an hour after an ordinary meal, and may continue ten or twelve, sometimes even eighteen hours, according to the kind of food and the state of digestion. The essential condition to the production of the milky serum, seems to be the presence of oily matter in combination with protein-compounds, or with starch, in the food; for if any of these substances, such as *starch*, *sugar* (and probably all vegetable substances destitute of oil), also *fibrin*, *albumen*, or *casein* (and probably all other forms of *protein compounds*), be administered in food entirely deprived of oily matters, no milkiness in the serum is produced, whereas it occurs at once if oily matters have been taken. Gelatin seems to render the serum white, yet this cannot be regarded as certainly established, for in the only two cases in which the effect of gelatin was tried it was questionable whether some had not found its way into the food partaken of.

3. *Coagulability of Fibrin.*—Dr. Buchanan§ has offered some original views respecting the coagulability of fibrin. It has hitherto been supposed, and apparently on good grounds, that fibrin possesses a spontaneous tendency to coagulate, by which inherent property it is distinguished from albumen and casein, which latter substances only coagulate on the application of certain re-agents; but from the results of several interesting experiments which he details, Dr. Buchanan considers that even fibrin coagulates only when acted on by certain substances, and if these substances do not exist in a solution containing fibrin such as in dropsical fluids, no coagulation of the fibrinous principles takes place until they be added. According to Dr. Buchanan's view, the elements in the blood which cause fibrin to coagulate are the white corpuscles. [Yet in Müller's experiment of filtering frog's blood, the fluid which passed through the filter contained no microscopic globules at all, still it coagulated perfectly.] When liquor sanguinis is effused into living tissues Dr. Buchanan considers that the contained fibrin coagulates through the influence exerted upon it by these tissues, and the more simple in structure they are, the more energetically do they induce the coagulability of the fibrin.

Mr. Addison|| has contributed further observations in favor of his opinion that the fibrinous principle of the blood is contained within the colorless blood-corpuses, and does not exist simply in solution in the liquor sanguinis, at least not until after rupture of these corpuscles, and the discharge of their contents.¶

\* Abstract of a paper read before the Royal Society, in Magazine of Natural History, Aug., 1845.

† Philosoph. Magazine, May, 1845.

‡ London Med. Gaz., Oct. 10, 1845.

§ *Id.*, Aug. 8, 1845.

|| The actual Process of Nutrition, &c., 1845, p. 37.

¶ Mr. Gulliver's paper on the Buffy Coat of the Blood, an abstract of which was given in the last Report, is published in the Edin. Med. and Surg. Journal, Oct., 1845.

4. *Accumulation of Blood in the Large Veins after Death.*—The circumstance of blood accumulating after death, in the large veins and right cavities of the heart, is attributed by M. Lesauvage,\* in a great measure, to the effect of the cooling of the body, which takes place first in the extremities, and on the external parts of the body: in consequence of this process of cooling the tissues and vessels contract, and the blood is directed to the internal parts of the body, which cool latest: the post-mortem contraction of the muscles will likewise have a tendency to force the blood into the interior of the body.

### § II.—Digestion.

5. *Rate at which Chyle enters the Blood.*—Some experiments, undertaken with the view of determining the rate at which chyle passes from the thoracic duct into the circulating system, have been performed by Dr. Bidder.† Dogs and cats were the animals experimented on; they were killed by strangulation in order to avoid any great loss of blood, which would probably have caused a more rapid flow of chyle, and thus have interfered with the accuracy of the results. After death the sternum and anterior parts of the ribs were removed, and the left lung pushed aside, in order to reach the thoracic duct, which was then cut across (a ligature having been placed around it above the incision), and the lower divided extremity placed in a glass vessel so as to collect and measure the flowing chyle. After operating in this manner on several cats, he calculated that the quantity of chyle which flowed from the thoracic duct of each, in twenty-four hours (averaging from one to two pounds), was in proportion to the weight of the body as 43 : 229, or as 1 : 5.34. From this it would appear that, since (according to Valentin's calculation) the quantity of blood in a cat's body bears to the weight of the entire animal the ratio of 1 : 5.75, the quantity of chyle which passes from the thoracic duct into the circulatory system, in the course of twenty-four hours, is about equal in weight to the entire mass of blood in the body, and exceeds it in volume. Experimenting in the same way upon dogs, and following similar calculations, he found that the quantity of chyle which passes into the circulating system of each, was about two-thirds that of the entire mass of blood.‡

6. *Thoracic Duct.*—Several anomalies in the disposition of this duct have been mentioned; one by Professor Putrubau,§ in which the duct, originating in the usual way, when arrived opposite the seventh dorsal vertebra, divided into two equal-sized branches. The left branch deviated suddenly from the middle line, and passed directly towards its destination; when near the left subclavian artery it subdivided into two more branches, which curved round the artery, and thus reached the angle of junction of the left subclavian and jugular veins, into which they emptied themselves by two distinct openings, situated close to each other. The right division ascended in a spiral curve to the angle of junction of the right subclavian and jugular veins, into which it entered by a single opening. This complete bifurcation of the thoracic duct, although of rare occurrence, has been noticed by J. F. Meckel, and some others. Another anomalous case is mentioned by Professor Soitzer.|| The duct commenced, as usual, on the first lumbar vertebra, and ascended entire to the eleventh dorsal, at which point it gave off a branch of larger size than the duct itself; this branch ran in front of the thoracic aorta, round which it curved, passing between the artery and the spine, then ascended over the eleventh and tenth dorsal vertebrae, formed a loop round the vena azygos, and entered the thoracic duct again at a right angle.

### § III.—Circulation.

7. *Impulse and Sounds of the Heart.*—The coincidence of the impulse of the heart against the walls of the chest, with the ventricular systole, which is still denied by some, has received further confirmation from some researches by Dr. Gola.¶ Not that

\* Comptes Rendus, Août 25, 1845.

† Muller's Archiv., Heft 1, 1845; an abstract of the paper is given in Schmidt's Jahrbücher, No. 7, 1845, p. 33.

‡ Among other observers who have endeavored to determine the rate at which chyle passes into the blood, reference is made to Haller (Elementa Physiol., vol. 7, p. 323), who states that only from four to eight ounces of chyle are prepared daily; to Magendie (Précis élément. de Physiol., 1825, t. 2, p. 183), who obtained from the thoracic duct of a dog, opened in the neck, half an ounce of fluid in five minutes, or at the rate of six ounces per hour; to Marigney (Magendie's Journ. de Physiol., t. 8, p. 176), who procured only nine grains of chyle in ten minutes, from a rabbit; also to Cruikshank and Lieberkuhn, who made equally indefinite statements.

§ Müller's Archiv., Heft 1, 1845.

|| Schmidt's Jahrbücher, Heft 3, 1845.  
¶ Archives Gén. de Méd., Juin, 1845.



such confirmation was necessary, the fact having been abundantly proved and established long since. M. Parchappe\* has needlessly repeated the cruel experiment of exposing the heart of living animals, for the purpose of ascertaining whether any sound appreciable by the stethoscope is given out during the contraction of this organ: he says there is not; but the results of previous experiments on the contraction of the heart and other muscular parts, render the truth of this assertion questionable.

8. *Relative Force of the Two Ventricles.*—Ludwig† has recently questioned the accuracy of many of the conclusions drawn by Valentin, from his experiments on respiration and circulation. One amongst other statements made by Valentin was, that inasmuch as he had determined the weight of the muscular substance of the left ventricle of the heart to be twice that of the muscular substance of the right, so the force exerted by the right ventricle, in contracting, could only be half that exerted by the left. Ludwig, however, found, in thus endeavoring to estimate the relative forces of the two ventricles, that much depended upon whether the muscular substance was weighed in a moist or dry state, for he found the muscular tissue of the left ventricle to contain a much less proportionate quantity of water than that of the right, and consequently to have a much greater relative weight when dried than when moist. He considered, therefore, the mere determining the relative weight of the two ventricles to be an incorrect mode of estimating their relative forces, whether this estimate was formed from the weight of the dry or (especially) of the moist muscular substance; unless, indeed, it could be determined that a given quantity of water was necessary to the production of its fullest amount of force in a given quantity of muscular substance. Were it, however, to be admitted that the difference in weight between the muscular substance of the two ventricles, when weighed in a moist state, might be taken as the estimate of the relative force of each when contracting, even then it would be difficult to prove that the force of the left ventricle bears to that of the right, the ratio of two to one, because in these calculations the share taken in the force of each, by the muscular substance of the septum, cannot be duly estimated. Valentin calculated that two-thirds of the force of the septum was expended upon the left ventricle, and the remaining third only upon the right; but this division of the force exerted by the muscular fibres of the septum, Ludwig justly observes, cannot be conceived to take place, because of the intimate interlacement of the fibres composing the septum, and of the fact that the two ventricles contract simultaneously. It seems most probable that the septum is formed almost as much by the walls of one ventricle, as by those of the other, and that it contributes nearly an equal amount of force towards emptying the cavity of each during contraction. [It should be observed, that the estimates made by Valentin were only intended to serve as average ones, and that as such they answer as well, or perhaps better, than any yet given.]‡

9. *Venous Circulation.*—Some experiments, undertaken chiefly with the view of estimating the amount of force exercised by the current of blood in the venous system, and of determining what are the agents concerned in the production of this force, have been performed by Dr. Mogk.§ In these experiments he made use of Poiseuille's hæmadynameter, but modified in such a way that by its application the amount of lateral pressure exercised by the venous blood upon its walls could be estimated without any obstruction being offered to the current.|| His researches have added confirmation to what was previously ascertained, namely, that although the respiratory movements and muscular contraction are by no means essential conditions to the movement of blood in the veins, yet that they each by their action contribute towards increasing the force of the current, particularly muscular contraction, when its influence is exerted upon veins provided with valves. It was proved by the experiments of Poiseuille, and more recently by those of Valentin, that during inspiration, venous (as also arterial) blood is drawn more rapidly to the heart than during the period of rest in the respiratory movement. Mogk states that this influence is exerted only upon those large veins which are situated in the immediate neighborhood of the heart, and not upon the

\* *Gaz. Méd.*, Juin 28, 1845, p. 415.

† *Schmidt's Jahrbücher*, No. 6, 1845.

‡ In *Müller's Archiv*, Heft 2 and 3, 1845, there is a very long paper by Dr. H. Frey, on the wave movement of blood in the arterial system; it will probably be noticed, with one or two contributions on the same subject, in next Report.

§ *Schmidt's Jahrbücher*, No. 6, 1845; extracted from *Henle's and Pfeufer's Zeitschrift*, 1, 3.

|| The apparatus was probably similar to that used by Valentin for the same purpose, and to that employed by Spengler in his experiment to estimate the force of the current of arterial blood. (*Müller's Archiv*, Heft 1, 1844.)

more distant ones. [This is undoubtedly true in the main, yet whatever expedites or retards the flow of blood in these large veins, must to some extent influence also the current in all the veins behind them.] Mogk found that the auricles exerted no suction power whatever on the current of venous blood. With regard to the agents concerned in the production of the venous current, he endeavored especially to determine the relative shares contributed by the contractive power of the walls of the veins, by the capillary system, and by the action of the heart. He confirms previous observers in stating that the former is without any influence on the movement of the blood; the amount of contractile power possessed by the coats of the veins is very small; but even were it much larger, and were it to be exerted upon the current of blood within, it is obvious that its effect would be as much to drive the blood backwards as onwards, especially in those veins which are unprovided with valves. Respecting the influence exerted upon the venous current by the capillary system, Mogk states that for "physiological and physical reasons," none can exist. [This is too strong an assertion, for it seems quite certain that the capillaries do possess the power of regulating, under certain circumstances, the quantity of blood which shall pass through them—indeed, he admits that they do; and some, although probably a trifling influence must thereby be exerted on the force and rapidity of the venous current.] Nothing, therefore, remains to account for the production of the venous current but the ventricular action of the heart, and it seems most probable that this is the chief, if not, as Mogk considers, the sole cause of the movement of blood in the veins. The amount of pressure exercised by the current of blood in the arterial system Mogk calculated was at least ten times as great as that exercised by the blood in the venous system.

10. *Structure of Veins*.—Some observations on the structural anatomy of veins have been made by Dr. Norman Chevers,\* from which it would appear that, in some respects, the structure of these vessels varies according as they are situated in the internal or the external parts of the body. The proper or middle tunic of the *internal* or deep veins of the trunk is composed almost entirely of several layers of strong elastic fibres, running parallel to each other, without any interlacement, and disposed in a circular direction around the vessels. In the *external* veins (with the exception of the epigastric and internal mammary), the middle tunic is still composed of a dense layer of circular fibres; but within this there is also another layer, of which the fibres run in a longitudinal direction.†

11. *Development of Capillaries*.—Platner‡ has added confirmation to the account given by Provoost and Lebert,§ of the mode in which capillary vessels are developed in new structures. These vessels never originate independently of the general circulation, but are invariably formed by offshoots from previously existing vessels, which offshoots arch and unite with each other so as to form common continuous tubes. This mode of development may be observed best in the tails of young tritons, in some of which may be seen numerous blind sac-like extremities of capillaries; in others long narrow processes may be noticed arising from these sac-like extremities, and insensibly disappearing from view; whilst in others again many of these processes may be found united to each other, forming a network of continuous arches. These arches, or capillary loops, are at first very narrow, and apparently impermeable to blood-corpuscles, their interior being occupied and blocked up by a finely granular material: soon, however, they increase in diameter, and the double contour of a distinct wall becomes perceptible, especially at the points where the narrow tubes are connected with the main capillary trunks. The nuclei which are observed on the walls of fully-developed capillaries Platner conceives to be structures of later formation, and not to be the nuclei of cells which have preceded the development of the capillaries, and from the fusing together of the walls of which cells Schwann considered the capillary vessels to be formed. Platner also adds doubts whether the nucleus fibres of fibro-cellular tissue and of muscle described by Henle, consist of nuclei which have belonged to previously existing cells, or are structures of after formation.

\* Med. Gaz., Aug. 8, 1845.

† For some curious arrangements observed in individual veins we must refer to the original paper.

‡ Schmidt's Jahrbücher, No. 6, 1845. Platner's original paper is given in Müller's Archiv., Heft 5, 1844.

§ Annal. des Sciences Nat., Avril, 1844. Also notice of same in Paget's Report, British and Foreign Med. Review, April, 1845, p. 588.

§ IV.—*Respiration and Animal Heat.*

12. *Movement of the first Rib.*—M. Petrequin\* has suggested an ingenious experiment to prove what some still doubt, that the first rib is capable of movement to a certain extent during respiration. It is a known fact that the subclavian artery may be compressed between the first rib and the clavicle, and the circulation in the upper extremity consequently arrested, by forcibly drawing the shoulder backwards and downwards, and, if whilst in this condition the clavicle be elevated about four lines, the circulation is restored in the arm. By the application of this experiment M. Petrequin has determined the question respecting the movement of the first rib, for if this bone is alternately elevated and depressed during respiration, then should the circulation in the arm alternately disappear and return as the individual inspires and expires, and so it is, for if, whilst the shoulders are kept in the above position, a full inspiration be made, the pulse in the brachial artery ceases at once, and again makes its appearance upon expiration, leaving no doubt as to the fact of the first rib being elevated during each inspiratory act. [That such movement takes place in women is sufficiently obvious during life, and its greater amount in them than in man is explained by the more moveable nature of the articulation of the first rib with the spine in the former than in the latter; but even in man the articulation allows of movement to a certain extent.]

13. *Purposes served by the Glottis.*—Dr. Bergmann† assigns to the glottis another function besides that of being subservient to the production of voice, and of acting as a guard to the air-passages. The additional purpose served by this narrow opening at the summit of the respiratory tract, he explains by reference to a principle in pneumo-dynamics. When a fluid moves through a cylinder which is of an uniform calibre throughout, with the exception of at one point where it is contracted, it follows of necessity that at this narrowed point it will have a greater degree of velocity than elsewhere; and, as Bergmann states, this velocity does not cease when the fluid leaves the contracted part, but is continued through the axis of the fluid in the wide part of the cylinder, the consequence of which is, that the central portion of the fluid, by corresponding directly to the swift current passing through the narrowed part, moves with greater velocity than the portions of fluid nearer to the walls of the tube. Now, applying this principle to what takes place in the respiratory passages, it follows that pure air entering through the glottis (the narrow part of the tube) will, by having its velocity increased, and the velocity propagated down the trachea and bronchi in a line directly continuous with the narrow opening of the glottis, arrive more speedily at its destination in the lungs than if the larynx and trachea had been only of an uniform calibre throughout; the same will apply to expiration, when, by the above arrangement, the passage of the carbonized air from the lungs outwards will be greatly facilitated. The advantages of such an arrangement are sufficiently obvious; they ensure a large supply of almost pure air to the lungs at each inspiration, and favor the rapid expiration of that which is charged with carbonic acid.

14. *Asphyxia.*—Some physiological facts with respect to asphyxia may be gathered from a series of interesting papers on the subject by Dr. Charles Clay, of Manchester.‡

15. *Animal Temperature.*—Dr. John Davy,§ having continued his observations on animal temperature, chiefly with the view of proving that the temperature of the human body is not a constant but a variable one, finds amongst other points that the temperature is highest in the morning after rising from sleep, continues high, but fluctuating till evening, is lowest about midnight, ranging on an average from 98° to 97·9°. Sustained attention or mental exertion, as might be supposed, raises the temperature in a much less degree than bodily exertion does.

16. *Temperature of the Body after death.*—That in some cases the temperature of the human body after death, instead of gradually falling, actually rises and gains even a considerably higher amount than it had in the highest stage of fever, was first noticed by Dr. John Davy; but the circumstance has not since attracted much attention. Some strange results, however, on the subject have been recently obtained by Dr. Bennett Dowler, from numerous observations on the temperature of the body imme-

\* British and Foreign Med. Rev., July, 1845, p. 125.

† Müller's Archiv, Heft 4, 1845.

‡ Medical Times, &c., pt. G, et seq. 1845.

§ Magazine of Natural History, Aug., 1845; abstract of paper read before the Royal Society.

diately before and after death from fever, and are given in an American Journal.\* The best way in which these results can be shown is by extracting several of his cases.

"Case 1.—Highest temperature during life in the axilla 104°, ten minutes after death, in the axilla 109°; fifteen m. in the thigh 113°, or 9° above the living maximum; in twenty minutes the liver gives 112°; in one hour and forty minutes the heart gives 109°; thigh, old incision, 109°; in three hours, after removing all the viscera, a new incision in the thigh gave 110°, or 6° above the living maximum.

"Case 2.—Alive, axilla 100°, hand 91°; dead, one hour and six minutes; axilla, at the end of every five minutes, 102°, 104°, 107°; thigh, 107°; two hours after death, centre of the left lung, 106°; apex, 104°; heart, 104°; thigh, 106°; three hours, axilla, 104°; liver, 106°; thigh, 106°; rectum, 105°; twenty-three hours after death, room 90°, thigh, 88°; putrefaction commenced.

"Case 3.—Last stage, hand, 91°; axilla, 100°; dead, thirty minutes, axilla, 104°; perineum without incision, 102°; rectum, 102°; epigastrium, 103°; brain, through the orbit, 102°; body appeared to be growing hotter, when demanded by friends for interment.

"Case 4.—Last stage, hand, 70° (7° less than the air); axilla, 95°; about two hours after death, axilla, 100°; rectum, 104°; axilla rose to 102°; epigastrium, 101°; thigh, 102°; brain, 99°; heart and left side of chest, 100°.

"Case 5.—Two days before death, hand, 101°; axilla, 104°; one day before death, hand, 100°; axilla, 100°; dead five minutes, axilla gave at different periods, and was still rising, 103°, 4°, 5° 6°; epigastrium, 106°; brain, 101°, and falling; the thigh, 101°, though exposed to a cold wind, which sunk the mercury 108 during the observations.

"Case 6.—Air cold (Oct. 26), mercury falling 3° or 4° per hour; dead one hour, axilla, 103°; epigastrium, 104° nearly; liver, 108°, and rising; brain, 88°, falling; two hours after death, thigh, 104°; left side of chest, 97°.

It would appear from the above that the maximum of post-mortem heat has been observed in the thigh. The following table shows the highest amount of temperature observed in the eight principal regions in different subjects.

Thigh.	Epigast.	Axilla.	Chest.	Heart.	Brain.	Rectum.	Liver.
Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.
113	111	109	107	109	102	111	112
109	110	109	106.5	106	101	109	109
109	109	108	106	105	101	107	108
109	109	108	106	104	100	107	107
108	109	107	105	104	99	106	106
Mean 109.4	109.6	108.2	106.1	105.6	100.6	108	108.4

#### § V.—Kidneys, and the Secretion of Urine.

17. *Minute anatomy of the Kidney.*—Some opposition having been offered by Reichert,† Ruschke, and others, to the full reception of the statements made by Mr. Bowman, in his excellent account of the minute structure of the kidney,‡ Dr. Gerlach§ was led to institute some further investigations, and the results he obtained confirm in most particulars the description given by Mr. Bowman. One of the essential peculiarities noticed by Mr. Bowman in the structure of the kidney was the immediate connection existing between the Malpighian tufts of vessels (or bodies) and the uriniferous tubules in the kidneys, both of man and of all animals, so far as he had examined them; an arrangement which had been frequently before supposed, but never actually proved to exist. Upon the publication of Mr. Bowman's account, Reichert, and some others, made several attempts to discern this connection, but were unsuccessful, and

\* Medical Examiner, June, 1845.

† Report on progress of Microscopic Anatomy in Müller's Archiv for 1843, p. 231.

‡ Philosoph. Transactions, 1842.

§ Müller's Archiv, Heft 4, 1845.

they accordingly offered statements which were opposed to the description given by Bowman. Upon repeating Reichert's method of examination, which consisted in making extremely fine sections of the substance of the kidney, and carefully examining them beneath the microscope, also in isolating the several Malpighian bodies as much as possible, Gerlach came to the same conclusion which Reichert had arrived at, and was inclined to deny the existence of a direct continuity between the Malpighian bodies and the uriniferous tubercles; and it was not until he had resorted to repeated and careful injections of the kidney through the urinary tubes that he succeeded in clearly determining that such an arrangement does in reality exist. After many attempts, he seems to have succeeded in injecting the urinary tubercles more completely than has been yet done, and has contrived to make some of his injection fluid pass into and distend the capsules within which the Malpighian tufts are inclosed; a result which Bowman considered to be almost impracticable, owing to the length and tortuosity of the tubules, the delicate nature of their walls, and to there being no vent by which the secreted fluid already contained within the tubules could pass out, and so make way for the injection to enter. For the purpose of injecting the tubules, Dr. Gerlach recommends the employment of sheep's kidneys, for in these animals the tubules are tolerably wide: it is quite essential to success that the kidneys be perfectly fresh. The following may be stated as the chief results which Gerlach obtained from his investigations: 1. The fact of the direct continuity of the Malpighian capsules with the uriniferous tubules, as discovered by Bowman, was clearly confirmed, but it would seem that Bowman's account, which describes the tubules as terminating in these capsules as by so many blind pouches, is not quite correct: the capsules are merely offshoots, or sac-like dilatations from the sides of each tubule with the cavity of which they communicate by a slightly narrowed neck, and are not placed at the terminal extremities of the tubules. Gerlach states that a tubule, having given rise to a pouch, continues its way onwards, forming fresh pouches here and there, and eventually terminates, not in a blind extremity, but by forming a loop; and these loops which the various tubules form have, doubtless, been mistaken for so many blind extremities. 2. These pouch-like dilatations (which are the capsules of the Malpighian tufts first described by Müller) are composed of the same structureless membrane as the uriniferous tubes into which they directly open. Bowman's description of the Malpighian tufts contained within the capsule is, on the whole, confirmed; the single efferent and afferent vessels belonging to the tuft perforate the capsule close to each other as described by him, although the point at which they enter does not seem in all cases to be directly opposite that at which the capsule communicates with the uriniferous tubule.\* 3. A curious circumstance remarked by Bowman was that each Malpighian tuft lies quite free within the cavity formed by the capsule, uncovered even by a layer of epithelium: this being the only known instance of a blood-vessel lying bare on a secreting surface, naturally attracted much attention, and was discredited by Reichert and others. Bowman inferred from such an arrangement that the watery and soluble parts of the urine are distilled from the blood of the vessels composing the tufts, whilst the essential elements of the urinary secretion are eliminated by the cells lining the internal surface of the tubuli uriniferi. Gerlach states that he examined this point, and found upon removing the capsule that the Malpighian tuft was completely covered by a thick layer of nucleated cells. This layer he states to be continued from the one which lines the entire internal surface of the capsule, and which is reflected from this surface on to the Malpighian body, just as the peritoneal coat lining the internal surface of the abdominal cavity is reflected on to the intestines; in both cases a space exists just at the point of reflection which is uncovered by epithelium. The vessels composing the Malpighian tuft therefore are in immediate contact with, or imbedded in a thick layer of nucleated cells, which doubtless are actively engaged in carrying on the process of urinary secretion. 4. Bowman described the existence in frogs of a layer of ciliary epithelium lining the entrance of the tubules into the Malpighian capsules, but was not able to trace it far into the interior of the capsule. Neither Ruschke nor Reichert were able to detect this ciliary movement, but it was observed both by Bischoff† and by Valentin‡; the latter noticed it, not merely at the part mentioned by

\* In searching for this continuity between the capsules and tubes beneath the microscope, Dr. Gerlach mentions a caution that the object should not be covered by glia, otherwise the globular form of the capsule is altered, and the detection of the continuity becomes almost impossible.

† Müller's Archiv, 1843, p. 132.

‡ Valentin's Report, bd. 8, p. 92.

Bowman as the seat of its occurrence, but also within the capsule itself; in this he was confirmed by Pappenheim. On this point Gerlach observes that in the kidneys of mammalia he has never been able to detect this ciliary movement at any part of the tubule or capsule, although he has made numerous attempts and examined kidneys in a perfectly fresh state; whereas, in the fresh kidneys of frogs, he has frequently noticed it both at the entrance of the tubule into the capsule and over the entire internal surface of the capsule itself, thus confirming Valentin's statement. He considers it probable that this movement exists also in the kidneys of the higher orders of animals as well as in the frog, but that from the fineness of the cilia it has yet escaped observation.

18. *Weight of the Kidneys.*—According to Ruschke,\* the kidneys of the new-born child, although absolutely much lighter than in the adult, are yet in proportion to the whole body much heavier, inasmuch as the weight of the two kidneys is to that of the whole body of the infant as 1:82—100, in the adult in the relation of 1:225. They, therefore, do not grow uniformly with the rest of the body, although the secretion of urine becomes more energetic after birth.

19. *Excretion of Urine.*—A case of extroversion of the bladder, in a lad, 13 years of age, having fallen under the observation of Mr. Erichsen, several interesting facts in relation, especially to the excretion of urine, were obtained.† The orifice of each ureter in the bladder appeared, when closed, as a small irregularly oval depression, about a line in diameter, situated on the summit of a conical papilla of the mucous membrane. A probe might be passed up the ureters for several inches without any sensible inconvenience being produced. From some observations made as to the phenomena attending the passage of the urine from the ureters into the bladder, it appears that, in the first place, a drop collects within the papillary termination of the ureter, which becomes somewhat distended; the orifice of this canal then opens to an extent of from two to three lines in diameter, and as soon as it has allowed the drop of urine to pass, it contracts with a sphincter-like action. The distension of the lower end of the ureter before the drop of urine escapes was very distinct, and the relaxation of the orifice of the canal had the appearance of being occasioned by the accumulation of the drop of fluid that collects above it. The closure of the vesical termination of the ureter, after the escape of the drop of urine, was accompanied by a slight retraction of the papillary bulging of the mucous membrane on which it terminated, and the whole process resembled an ordinary sphincter action. The two ureters did not open at the same time, but with an irregularly alternating action. During the periods of fasting the ureters opened on an average about three times in the minute, consequently the quantity of urine discharged from both ureters may be estimated as about three large drops in the same space of time; although this might be taken as the average rate of discharge, yet the action of the ureters was by no means regular, inasmuch as two or three drops would sometimes flow in rapid succession, whilst at other times a comparatively long interval would elapse between the escape of any two drops. When the patient lay on his back, the discharge was slow and gentle, being unattended with the distinct opening and shutting of the end of the tube, noticed when in the upright position. During a deep inspiration, as in yawning or coughing, or whilst straining at stool, the flow of urine was suddenly increased, and the fluid then escaped in a small stream, or in several large drops, in rapid succession. The urine itself was invariably acid, often highly so, whilst the mucous membrane of the bladder possessed a highly alkaline reaction; it was covered by a viscid glairy mucus, and was extremely sensitive to the touch. Some interesting experiments were undertaken with the view of determining the rapidity with which certain substances, after being taken into the stomach, are eliminated by the kidneys; and they corroborate, very satisfactorily, the observations of other experimenters respecting the rapidity with which, under favorable circumstances, various substances may be absorbed into the circulation, and appear in the urine. On experimenting with the prussiate of potash, the earliest period at which this salt made its appearance in the urine after it had been swallowed was about one minute, and the longest time that elapsed before it could be detected was thirty-nine minutes. From the results of a table which Mr. Erichsen gives, it would appear that this difference may be explained by the condition of the stomach in regard to its contents at the times at which the salt was taken; thus, when the stomach was empty,

\* Brit. and For. Med. Review, Oct., 1845, p. 420.

† London Med. Gaz., June 27, July 4, 1844.

and so the condition for absorption most favorable, the salt found its way to the urine most rapidly, but when swallowed immediately after a meal, the time required for its absorption and appearance in the urine was much longer; and this length of time seemed proportioned to the degree of fulness of the stomach when the salt was taken. Vegetable infusions seemed to require a much greater average time for their appearance in the urine than prussiate of potash; as in the case of this salt, and of the other substances experimented with, the rapidity of their absorption was dependent on the condition of the stomach in regard to its contents at the time the substances were swallowed. In order to ascertain how soon the urine would become alkaline after the administration of the salts of the fixed alkalies, the citrates and tartrate of potash and soda were at various times given in full doses; the patient could not be induced to take the carbonate of these alkalies, or the liq. and potassa of any sufficient quantity. The diuretic action of citrate of soda was very marked, as also its effects in speedily altering the secretion of the urine from acid to alkaline; about two hours and a half after a slight meal a solution of 3ij of bicarbonate of soda, saturated with lemon juice, was administered, in a tumbler of water. At the time of taking the mixture the urine was very acid, and was flowing at the rate of three drops per minute. Five minutes after taking this citrate of soda the flow of urine had increased to nine drops per minute, and at the twenty-eighth minute it became suddenly and most distinctly alkaline; the urine was now flowing at the rate of fourteen drops per minute. On the evening of the following day (about twenty-seven hours after the administration of the salts) the urine was again examined; it was very strongly alkaline, and was passing away at the rate of sixteen or eighteen drops per minute, and occasionally in a small stream; from the patient's statement, it had been passing at this rate all day. After this, the urine was examined twice daily, and continued alkaline until the fourth day; and it was not until the sixth day that it recovered its usual acid reaction. From a single case in which the citrate of potash was administered, the urine did not appear to be much augmented, although it was rendered distinctly alkaline, showing, so far as it goes, the superiority of the citrate as a diuretic. When the feet and legs were immersed in a pailful of tepid water, in which three ounces of acetate of potash were dissolved, the urine, in about an hour, became distinctly alkaline, and the rate of discharge increased from five to eight drops per minute. The effects of several other salts were tried in the same way, but no change in the condition of the urine could be detected. The influence of digestion on the rapidity of the secretion of urine was well marked in many of the observations. The effects were uniformly as follows:—For about twenty minutes after a meal the secretion was much diminished, and occasionally ceased entirely for a few minutes; at the end of this period it began again with increased rapidity, and continued in larger amount than usual until the digestive process was completed, by which time it had generally fallen to its ordinary standard. This increase in the quantity of the secretion occurred equally, whether drink was taken at the meal or not, though not to the same extent, or so rapidly, when solid food only was taken. The effect of active exertion was shown to increase, in a very marked degree, the quantity of urine excreted, whilst rest was found to have a directly contrary influence [showing, therefore, that the quantity of urine eliminated is not so immediately proportioned to the amount of fluid lost by perspiration as is commonly supposed].

20. *Effects of Mental Emotion on Secretion.*—A curious case illustrating the influence of the passions of the mind on the secretion of milk is narrated by M. Krummacher.\* A woman, immediately after being in a violent rage, put her infant, aged eight months, to her breast; the child at first refused to suck, but eventually did so, though it shortly afterwards vomited the milk which it had taken: in a few hours afterwards the child took the other breast, but was shortly attacked with violent convulsions, which, after continuing with unabated severity for some time, terminated in death.

#### § VI.—Nervous System.

21. *Effects of Removal of the Cerebro-Spinal Fluid.*—M. Longet† has disproved the correctness of the commonly received opinion, that removal of the cerebro-spinal fluid induces a singular disturbance of the motor functions. The plan recommended and

\* *Gaz. des Hôpitaux*, Juin 10, 1846.

† *Comptes Rendus*, Juin 16, 1845.

usually practised for the removal of the fluid, is to open the dura mater and arachnoid, between the occiput and atlas, after having cut through the parts which cover the occipito-atloidean space. The liquid once evacuated, it is asserted that the animals stumble about as though intoxicated. In the horse, dog, cat, and other animals, Longet has frequently performed the above experiment, so far as cutting through the posterior cervical muscles at their occipital insertion, as also the supra-spinous ligament, but without dividing the occipito-atloidean ligament, and consequently without giving exit to the cerebro-spinal fluid. In all these cases the animals immediately presented the same disturbance in locomotion, and the same uncertainty of gait, which have been hitherto always referred to the removal of the cerebro-spinal fluid. As a counter-proof was necessary, he withdrew this fluid without dividing the muscular and ligamentous parts in the posterior region of the neck: this he effected by removing a single vertebral lamina towards the middle of the dorsal region: immediately after the first part of the operation a slight weakness was manifested, but it was not in the least augmented by withdrawal of the fluid, and moreover the animals in no case presented any of the stumbling movements (titubation) so characteristic and so remarkable, which are observed when the soft parts alone of the neck are divided. It results from the above experiment, that the important influence over the motor function, which has been attributed to the cerebro-spinal fluid, does not exist, and that the effects which have been observed to follow the removal of this fluid, were induced by the division of the soft parts of the neck in performing this operation. M. Longet found also, that the disordered movements which result from the operation performed on mammalia, do not occur in the case of birds, the longitudinal axis of whose neck is perpendicular to that of the head, and the occipital foramen situated at the base of the cranium.

22. *Vesicular Nervous Matter*.—Todd and Bowman\* have noticed in the grey nervous matter (especially in that taken from the cerebellum, the spinal cord, and the locus niger of the crus cerebri), that many of the ganglion-globules or nerve-vesicles are characterized by being irregular in form (not globular, like most of the rest), and by having one or more tail-like processes extended from them, for which reason they have been named *caudate* by these anatomists. These vesicles do not differ in structure from the simple and ordinary form: they are commonly of very large size. The tail-like processes which spring from them vary considerably in number and in size: in structure they are very delicate, and seem to consist mainly of a finely granular material, similar to that contained in the interior of the nerve vesicle, with which they distinctly appear to be continuous. Sometimes, one or more of them may be traced to a considerable distance, and be found to divide into two or three branches, which undergo a further subdivision, and give off some extremely fine transparent fibres, the ultimate destination of, and probable purpose served by which, remain yet to be proved. It seems probable that they either serve to connect together distant vesicles, or else that they become continuous with the axis cylinders of the tubular nerve fibres, which in most respects they very closely resemble.

23. *Radiated Sensations*.—Dr. Child† suggests a not improbable explanation of at least some of the forms of radiated or secondary nervous sensations, by supposing that the nerve-fibre primarily irritated, may, after forming a loop in the brain, be prolonged without break into the organ secondarily or sympathetically affected, and so convey the excited impression directly to the sympathizing parts. [The looped terminations of the nerve-fibres in the nervous centres, on the existence of which this hypothesis rests, has not been certainly determined, and it seems not improbable from the recent researches of Todd and Bowman, that the primitive fibres become directly continuous with the long branching processes which these anatomists have observed to be given off from many of the ganglion-globules of the grey nervous matter.]

23. *Localization of the faculty of Speech*.—In a paper read to the Academy of Medicine, M. Belhomme‡ attempts to prove, by the results of ten cases which he had witnessed, that the faculty of speech is located in the anterior part of the cerebral hemispheres, agreeing in this respect with the views of Bouillaud; it is difficult, however, to reconcile such an opinion with the fact, that in many cases of severe and destructive injury to the anterior portion of the brain, there is no affection of the speech whatsoever. An example of the kind occurs in a case noticed in the last Report (page 265).

\* *Physiological Anatomy of Man*, vol. I., p. 212.  
 ‡ *Archives Gén. de Med.*, 1845.

† *London Med. Gaz.*, Aug. 15-22, 1845.



24. *Relation of extent of Brain to amount of Intellect.*—It would seem from some experiments by M. Baillarger,\* that the amount of intellectual development in man, and in the various classes of animals, is far from being in direct ratio to the extent of surface presented by the brain of each; for instance, the brain of man has, in proportion to its volume, a much less extent of surface than the brains of the lower mammals; and the brain of a rabbit has, in proportion to its volume, an extent of surface two and a half times larger than that presented by the brain of man.†

25. *Animal Electricity.*—M. Matteucci‡ having continued his researches upon animal electricity, has obtained evidences of electro-chemical decomposition by the muscular current. From numerous experiments with frogs, he also finds, that the intensity of the muscular current is proportioned to the activity of respiration. Moreover, in operating on many warm-blooded animals, he has determined that the intensity of the current is proportioned to the rank of the animal in the scale of beings, whilst the duration of the current after death varies in an opposite ratio. With regard to the "*courant propre*" of the frog, previously described, he finds, from further observations, that this current does not belong exclusively to frogs, but exists in the muscles of all animals, provided that these muscles present at their extremities, an uneven tendinous termination.

26. *Nerves in Periosteum.*—Professor Purkinje§ describes the existence of a rich plexus of fine nerves in the periosteum of the tibia, which he states to have discovered by means of the solvent action of acetic acid on the cellular and fibrous tissue, whereby the nerves resisting the action of the acid are left beautifully distinct. He thinks it probable that the periosteum of other bones, and the aponeuroses, may also be found to contain nervous filaments.||

#### § VII.—Organs of the Special Senses.

27. *Taste. Papillary structure of the Tongue.*—An excellent and, in many respects, original account of the papillary structure of the tongue is contained in the second part of Todd and Bowman's Physiological Anatomy of Man.¶ There are three varieties of papillæ visible on the dorsal aspect of the tongue, namely, "the *circumvallate*, or *calyciform*, eight or ten in number, situated in a V-shaped line at the base of the organ; the *fungiform*, scattered over the surface, especially in front of the *circumvallate*, and about the sides and apex; and the *conical*, or *filiform*, much the most numerous, studding most of the surface, though most largely developed in the central part;" these three varieties, although they have hitherto been regarded as simple papillæ, are in reality compound organs, being clothed with a number of secondary, simple, and much more minute papillæ; which, from being covered over by the epithelial investment, and not visible until this covering is removed, have hitherto escaped notice. These simple papillæ, besides being set upon the compound ones, are also found scattered over the whole surface of the tongue, lying among the compound ones; and they likewise occupy a large portion of the smooth mucous surface immediately in front of the epiglottis, at which part their structure may be best examined, because they are there unaccompanied by the large compound papillæ. When examined at this part, each simple papilla is found to consist of an envelope of basement or structureless membrane, enclosing an obscurely granular matter, within which one or two minute capillary loops of blood-vessels are imbedded; the basement membrane of each papilla is invested externally by a delicate layer of scaly epithelium, which being covered again by the general epithelium, renders the several papillæ invisible, until the entire epithelial investment is removed. The authors have not been able to trace any nerve tubules into the papillæ at this part, although probably they exist there, but deprived of their white substance. The secondary papillæ, over the *circumvallate* and *fungiform*

\* Review Méd., Mai, 1845.

† Some physiological facts on the structure and functions of the brain may be collected from the series of lectures by M. Pinel, and by M. Bouillaud, published in the M-d. Times; from the lectures of Baillarger in the Lancet; and from the correspondence between Dr. Reid, Dr. Laycock, and Mr. Combe, on the reflex function of the brain, published in the Lancet.

‡ Encyclographie des Sciences Méd., Mai, 1845: Gaz. Méd., Avril 19, and other French Journals of the same period, from Report to the Academy of Science, April 4, 1845; Abstract, vol. i., p. 265.

§ Müller's Archiv, Heft 4, 1845; also in London Med. Gaz., Oct. 31, 1845, translated by Dr. Gull.

|| In the last report mention was made of M. Bourguery's researches into the sympathetic or splanchnic system of nerves; the whole of these researches have been published in several long papers in the Gaz. Méd. of Mai 3-10, and Septembre 6-13, 1845.

¶ Page 434, et seq.

varieties of the compound papillæ, have a structure in all respects similar to that of those just described; but when situated over the *filiform* papillæ, they present some distinctive peculiarities, being larger and more pointed, also possessing considerable stiffness and elasticity; the latter quality depends on a quantity of yellow fibrous tissue which they contain, and which with a wavy, almost spiral character, runs in a general longitudinal direction up the papilla. Nerve-fibres are commonly found within this variety of the secondary papillæ, especially when examined near the apex of the tongue. Occasionally the authors have noticed these nerve-tubules to terminate in loops,—probably they all do so. Besides these peculiarities in their secondary papillæ, the *conical* or *filiform* variety of the compound papillæ are distinguished by the peculiar form, which their name expresses; also by “their whitish tint, derived from the thickness and density of their epithelium. This epithelium, indeed, frequently composes two-thirds of their length, being sent off from the sides and summits of their secondary papillæ in long pointed processes, which are immersed in the mucus of the mouth, and may be moved in any direction, although they are generally inclined backwards. These epithelial processes are more stiff according as the particles of which they consist approach more nearly to the dense texture of hair; and a few among them actually enclose minute hairs, pointed at the end, and provided in some cases with an extremely fine central canal. One of the largest found was one tenth of an inch long, and from 1-2000 to 1-3000 of an inch thick.” Others of the processes have a more or less imbricated arrangement of the epithelial particles, in all of which the imbricated particles tend to coalesce towards the point. Many of the processes may be regarded as soft or uncondensed hairs, and preserve the same thickness for a considerable length.\* From the structural peculiarities of these filiform compound papillæ, the thickness of their epithelial covering, the stiff brush-like character of their filamentary productions, together with their greater development in the middle part of the dorsum of the tongue, which part is chiefly employed in the movements of mastication, and least endowed with the function of taste, the authors infer the subservience of these papillæ to the purposes of mastication rather than to the function of taste; whilst the simple papillæ at the base of the tongue, and those covering the circumvallate and fungiform papillæ, being invested by a comparatively thin layer of epithelium, which would readily permit a speedy translation of sapid substances dissolved in the mucus of the mouth, are doubtless the organs concerned in the sensation of taste, a supposition which receives confirmation from the fact of this kind of simple papillæ being most prevalent in those parts where the sense of taste is most acute, namely, the base, sides, and apex of the tongue.

28. *Function of Taste.*—Some precise and interesting conclusions respecting the seat of, and the nerves concerned in, the function of taste, are given by Todd and Bowman, in the same chapter from which the above account of the papillary structure of the tongue has been taken. It seems most probable that the entire dorsal surface of the tongue possesses the property of taste; but especially the circumferential parts, namely, the base, sides, and apex; whilst the central part of the dorsum, in which the sense of taste is feeble, is especially adapted, by the denseness and roughness of its epithelium (very marked in some animals), to aid in the comminution and dispersion of the food. The soft palate and its arches, with the surface of the tonsils, also appear to be endowed with taste in various degrees in different individuals; not so the pharynx, gums, or other parts. The above conclusions are warranted by the results both of disease and of careful experiments; and a further consideration of them shows, that since the base of the tongue, which is supplied solely by the glosso-pharyngeal nerve, and the anterior part, which is supplied solely by the lingual branch of the fifth pair, are both endowed with the sense of taste, both these nerves must contribute to the production of this sense; probably a share ought also to be attributed to the palatal branches of the fifth. The tongue is also an exquisite organ of touch, especially the sides and tip of its anterior portion. The question therefore arises whether the senses of touch and taste reside in the same papillæ, or in distinct ones, which, since so far as we now know there is no anatomical distinction between nerve tubules of different endowments, it is impossible to decide; there seems no difficulty, however, in conceiving that a single papilla may receive nerve fibres of different endowments, and thus,

\* The character of these hair-like epithelial processes will be best understood by referring to the admirable illustrations of them given in Todd and Bowman's book; the copious illustrations throughout the work are all most excellent.

in the case of the tongue, one and the same papilla may be subservient to the functions both of touch and taste.

Several interesting cases have been recorded, which prove that the fifth pair of nerves is concerned in the sensation of taste; one by Todd and Bowman,\* in which a middle-aged man suffered for eight years from complete loss of sensation in all parts supplied by the fifth nerve on the left side, with the exception of the forehead. The left eye was lost by destructive inflammation; the tongue was quite without feeling on the left side. His sense of taste was found perfectly absent in the anterior and middle part of the affected side; but not impaired behind, in the region supplied by the glosso-pharyngeal nerve. On the opposite side of the tongue his taste was quite acute in front. Two other cases of paralysis of the fifth pair are related by Mr. James Dixon.† In both, common sensation and the function of taste were unimpaired on the sound side of the tongue; but were both entirely lost on the anterior part of the affected side, whilst posteriorly, where the tongue is supplied by the glosso-pharyngeal, its functions were unimpaired.

29. *Eye.—Movement of the Iris.*—Some observations in favor of the view that the movements of the iris are dependent mainly upon the existence of circular and radiated fibres within its structure have been offered by Signor Guarini.‡ Of the existence of muscular fibres (or contractile fibres of some kind) in the iris there can scarcely be doubt, for by these only can the rapidly changing movements of which the iris is susceptible, be explained. The question to be determined is the mode in which these fibres are arranged—whether woven together in all directions, as believed by E. H. Weber, or consisting of two distinct sets of fibres, with a definite arrangement, the one circular and disposed like a sphincter muscle around the pupil, the other radiated, and distributed through the rest of the iris; the former set is conceived to contract the pupil, the latter to dilate it. In the latter view the two sets of fibres are supposed to be supplied with nervous influence from two different sources, the circular fibres being supplied by filaments of the third cerebral pair, emerging from the ophthalmic ganglion, the radiated ones by minute branches from the superior pair of cervico-spinal nerves, which enter the first cervical ganglion of the sympathetic, and then, united with the sixth pair of cerebral nerves, pass into the orbit. This view would seem to derive support from the results of several experiments; first, those of Professor Valentin, who found that when the third pair of nerves is divided in a living animal, the pupil dilates; but if the first ganglion of the great sympathetic be removed, it contracts; secondly, those of Guarini, who, having extirpated the superior cervical ganglion of an animal, and thus produced contraction of the pupil, administered a poisonous dose of strychnine (the effect of which generally is to dilate the pupil). The pupil of the side operated on dilated but little, for the filaments of the third nerve, now unopposed, maintained its contraction, whilst the pupil on the opposite side was enormously dilated, probably because of the radiated muscle being put strongly into action by the stimulating effects of the strychnine on the spinal cord, and so on the nerve supplying this muscle. This view is supported also by the contraction of the pupil, which results when, in a still irritable body, the third nerve, or the ophthalmic ganglion, be stimulated by pricking, or by galvanism; and by the dilatation which ensues when the superior cervical ganglion is irritated. This latter experiment seems to prove the muscularity of the iris, for, as Guarini observes, no other tissue than the muscular possesses the property of contracting after death upon the application of mechanical or chemical irritation. Guarini endeavors also to prove that venous congestion of the iris, resulting from compression of the vessels interwoven in its structure, by contraction of the muscular fibres, tends somewhat to render the contraction of the pupil more complete; thus endeavoring to reconcile the old view, attributing contraction of the pupil to vascular erythism, to that attributing it to muscular action, both of which he considers combine to produce the effect; but in this idea he is justly opposed by Mr. France,§ who observes that this venous congestion could not result from contraction of the circular fibres placed around the pupil.

30. *Nerves of the Cornea.*—Branches of the ciliary nerves have already been traced into the substance of the cornea; but their distribution has not been minutely de-

\* L. c., p. 444.

† Med. Gaz., July 18; abstract of paper read to the Medico-Chirurg. Society, June 30.

‡ Gaz. Méd. de Paris, April 26, from the Annal. Univers. di Medicina; also translated in

Med. Gaz., September 19, by Mr. France.

§ Med. Gaz., Sept. 19.

scribed. Professor Purkinje\* states that if the cornea be acted upon by acetic acid, it will, after first appearing rather opalescent, become perfectly transparent, and if then examined from within, a rather complex network of nerves will be seen running from the circumference to the centre. None of the filaments seem to be lost in the substance of the cornea, nor to pass into the conjunctiva.

31. *Musce Volitantes*.—Dr. Mackenzie† has contributed a long and elaborate paper on the "Vision of Objects on and in the Eye," otherwise on the various kinds of *musce volitantes*; and having analysed at length the several opinions of writers on the nature and causes of these spectra, he considers them in the following systematic order:—1. *The muco-lacrymal spectrum*, which is generally invisible to the naked eye, but may be usually seen in the form of dark globules (capable of being removed, or having their position changed, by nictitation), when looking through the microscope, or still more distinctly and certainly when viewing a candle, placed at some twenty feet distant, through a deep concave lens. This spectrum is the result of each globule of the muco-lacrymal secretion lying on the cornea, acting on the small pencil of divergent light thus allowed to fall upon it, which it converges sufficiently as (together with the refraction of the transparent media of the eye) to bring it to a focus on the retina, where are consequently produced as many multiplications of the image of the candle as there are globules.—2. *Spectra depending on corpuscles between the cornea and vitreous humor*. These also are ordinarily invisible to the naked eye; but their presence may be detected by the same method as was indicated for the muco-lacrymal spectrum, from which they may be distinguished by not suffering displacement on nictitation, by occupying a posterior plane in the field of view, and by the double images which these corpuscles form on exposing the eye to two divergent beams of light (as in Sir David Brewster's experiment with two candles), being less separated from one another than the double images of the muco-lacrymal spectrum. From corpuscles residing in the vitreous humor they will be distinguished by their occupying an anterior plane in the field of view, by their double images being more widely separated, and by the possibility of readily inverting their spectrum by simply carrying forward the convex lens (through which the candle is being viewed in the experiment) from the eye, so that the cornea is no longer within the focal distance of the lens. In this latter circumstance it would seem that if, by shifting the focus of the rays which impinge on the retina, we find that the corpuscles (the situation of which is the object of investigation) are at one time anterior and at another posterior to that focus, and their spectrum thereby inverted; this proves that they are situated in the anterior part of the eye; whereas if the spectrum cannot be thus inverted, the cause must reside in the vitreous humor. 3. *Spectra depending on corpuscles in or behind the vitreous humor*. These are of four different kinds, and may be seen by looking at the sky through a pin-hole aperture in a card, or more distinctly by looking at the flame of a candle, two or three feet distant, through the eye-glass of a compound microscope. In this last experiment "four sets of spectra will be seen, independent of the muco-lacrymal spectrum. The most remarkable one appears nearest to the eye, and consist of twisted strings of minute pearly globules hung across the field of view; this I shall call the *pearly spectrum*. These strings are of various forms and lengths; they also vary in number, sometimes existing in such large quantity as to be troublesome in ordinary vision, giving rise to another form of *musce volitantes*, which appear usually as a thin cloud, somewhat like the wing of a fly, or as semi-opaque threads, like a spider's web, or of blackish soot-like particles, dancing before the eyes. Sometimes the threads terminate in a kind of bulb. The pearl-like globules, of which the threads are composed, vary in size, and seemed joined together merely by apposition, without being contained in a tube.‡ The second in point of remarkableness, and the farthest from the eye, consist of watery-like

\* Müller's Archiv, Heft 4, 1845; also translated by Dr. Gull, in London Med. Gaz., Oct. 31, 1845.

† Edin. Med. and Surg. Journ., July.

‡ Dr. Mackenzie enters very minutely into the subject of the probable seat and cause of the pearly spectrum, and after analysing at length the opinions of the various writers who have regarded the pearly corpuscles as situated on the surface of the cornea, within the aqueous humor, the imagined humor of Monge, the vitreous humor, the space between the hyaloid membrane and the retina, the retina and the choroid, he concludes that in all probability the vitreous humor is their seat (which view is also entertained by Dr. Jago, as mentioned in our last Report, and by others). What the cause may be is still obscure; Dr. Mackenzie inclines to the notion that the contracted (or probably obliterated) capillary arteries which traverse the vitreous humor may contain arrested blood-globules, and so give rise to the appearance which the pearly spectrum presents; whilst Dr. Jago (London Med. Gaz., May 16, 1845) seems to regard them as caused by fringes or processes of the hyaloid membrane, or deposits within this membrane.

threads, destitute of any globular appearance, and depending chiefly from the upper part of the field, easily seen at the lower part: this I call the *watery* spectrum, merely from its appearance, for I have ascertained neither its seat nor its nature. The depending threads of which this spectrum consist have a somewhat rounded appearance, differing in this respect from the pearly muscæ, the threads of which seem flat. Each of the watery threads is bounded by two dark lines, within which there is a broad space, which is clear and entirely destitute of anything like globules. These watery threads measure fully twice the diameter of the threads of the pearly spectrum. They are generally six or eight in number, not all situated in the same plane. Their general course is vertical, and generally flexuous: they often divide at their lower extremity, into two or more branches, which seem to melt away insensibly. They have so much the appearance which streams of tears, flowing over the cornea, might be supposed to present, that they might be readily mistaken for them, but from their lying in a plane posterior to the muco-lacrymal spectrum. At first sight they seem to slide down slowly from the upper to the middle part of the field of view; but they possess neither the extent nor the quickness of motion of the pearly spectrum. Any bending or extending which they undergo in the movements of the eye are slight, and although seemingly displaced and broken into fragments by nictitation, they are not really so. This watery spectrum sometimes becomes much exaggerated, and then produces the sensation of muscæ volitantes in ordinary vision. It is frequently compared to the appearance of threads of spun glass, laid across each other, or to that of a fine lock of wool, and occasionally, by one or two forcible acts of nictitation, they may be dispersed. In two distinct planes between the *watery* and *pearly* spectrum are placed two sets of insulated globules, which I call the *insulo-globular* spectra. The globules composing the set farthest from the eye are hazy and ill-defined, and may be compared to small grains of sago; those nearest to the eye are clear in the centre, exterior to which they present a sharp black ring, and still more exteriorly, a lucid circumference. The above four sets of spectra never mingle with one another, so as to change the order in which they stand before the eye; but the pearly spectrum always appears the nearest; then the sharply-defined insulo-globular; then the obscurely-defined globules; and, farthest away, the watery threads. That the corpuscles which produce these four sets of spectra are situated in or within the vitreous, and not, as Donni\* supposed, in the aqueous humor, is manifest from the fact that none of these spectra can be inverted by viewing them through a concave lens, or by first viewing them through a convex lens held close to the eye, and then carrying the lens forward from the eye, so that the eye is beyond the focal distance of the lens, experiments which at once invert the muco-lacrymal spectrum, and would, it is presumed, do the same to any spectrum depending on the state of the aqueous humor of the crystalline." 4. The next variety of spectrum Dr. Mackenzie describes is the *circulatory* one. It is frequently observed after sneezing, coughing, or any kind of straining, especially when performed with the eyes open, and appears in the form of numberless minute lucid points, darting about in all directions, an effect which Dr. Mackenzie thinks may probably be due to the passage of blood-corpuscles through the vessels of the choroid. 5. His last variety is the *vascular* spectrum, a term applied to certain fixed muscæ, as those produced in Purkinje's well-known experiment, in which the blood-vessels and central spot of the retina are brought into view, as also the numerous class of phenomena known by the names of *accidental colors* and *ocular spectra*.

32. *Inability to distinguish Colors*.—In a paper on this subject, Dr. Pliny Earle† mentions, amongst the "peculiarities hitherto unnoticed," that the power of accurately distinguishing colors varies at different times in the same individual, and that the inability to distinguish colors is not unfrequently connected with, or accompanied by, a defective power of discriminating between musical notes.

#### § VIII.—Menstruation.

33. *Periods of the Occurrence and Cessation of the Menses*.—On the subject of menstruation, Dr. Guy‡ has furnished some valuable and additional information respecting the periods at which this function commences and ceases amongst females in England. From observations on 1500 cases, he found that the greater number of

\* Archives Gén. de Méd., t. xxiii., p. 115.

† American Journ. of Med. Sciences, April, 1845.

‡ Med. Times, August 9, 1845.

females first menstruated at the age of 15;\* "the fourteenth year came next in order, then the sixteenth, while the number at 13 and 17, at 12 and 18, and at 11 and 19, approximated very closely to each other. Before the 11th, and after the 19th year, the numbers were very small. In more than half the cases the menses made their first appearance at 14, 15, and 16 years of age. The earliest period was 8 years, and the latest 25." With regard to the period at which menstruation ceases, he deduced from the results of 400 cases, that the cessation may occur (independent of disease) at any period, from the 27th to the 57th year: in the majority of cases it occurs in the interval from 40 to 50 years of age, the number from 45 to 50 being greater than that from 40 to 45. [At Lyons, M. Raciborski found the average age at which menstruation ceases, to be between 45 and 50: at the Salpêtrière, in 100 women, the average age was 46.03: at Warsaw 47.05: at Christiana 48.07.† These results agree satisfactorily with those obtained by Dr. Guy.] The period during which the habit of menstruation continues, varies with the time of its first appearance, and, as a general rule, the earlier it commences the longer it lasts (a circumstance noticed by Raciborski). Dr. Guy mentions two cases which afford additional evidence of the possibility of menstruation recurring regularly during the whole period of lactation, and another case where menstruation occurred regularly during both pregnancy and lactation.

From calculations founded on 310 cases, Mr. Robertson‡ finds that amongst Hindoo women, the average age for the arrival of puberty is 12 years and 8 months, which is earlier by 2 years and 2 months than the period for the occurrence of puberty in England; this circumstance, however, he considers not sufficient to justify the inference, that the early period noticed is referrible to the heat of the climate of India, because in some countries, where the constant temperature is higher than in India, menstruation does not occur till a later period.

From numerous researches into the laws regulating the periodicity of healthy and diseased phenomena, in the animal system, Dr. Schweigg§ found that the average interval between successive returns of the menstrual period was as nearly as possible 28 days; the average in 500 times being 27 days and 56 hours.||

34. *Premature Menstruation*.—A case of this kind is mentioned by Mr. Whitmore, of Cheltenham,¶ in which a discharge analogous to the menstrual one occurred a few days after birth, and returned regularly every three weeks, lasting for two or three days, until the child attained the age of four years, when it died, after an illness of forty-eight hours' duration. Its great development, as observed after death, was very striking, equalling that of a girl ten or eleven years of age. The mammae were large, the mons veneris covered with hair, as also sparingly were the labia pudendi, which were much enlarged. The development of the pelvis, deep-seated genitals, and lower limbs, was very considerable. [I would have been interesting had the condition of the ovaries been stated.]

35. *Recurrence of Menstruation at an advanced age*.—MM. Murynek and Kluysens\*\* relate the particulars of two cases in which menstruation recurred after the lapse of several years from its cessation, and continued to an advanced period of life. The subjects of both cases were nuns. In one menstruation had ceased at the age of 52, and recurred at the age of 62, and continued, when the case was recorded, at the age of 73, with perfect regularity. What is curious, the patient was attacked on the cessation of her menstrual discharge with gastralgia, which persisted in spite of various remedies, until the recurrence of the discharge, when it left her, and her health again became perfect. In the second case, the menstrual discharge ceased at the age of 52 also: it recurred at the age of 60, and has continued up to the date of the report, when the patient was 90 years of age. This patient was attacked on the cessation of men-

\* [This corresponds closely with the observations of Mr. Robertson, who, from 2160 cases, calculated that the average age of puberty, or of the first appearance of menstruation in England, is 14 years and 10 months. Among females in the east of France, the researches of M. Petrequin (British and Foreign Med. Rev., July, 1845, p. 138) led him to the conclusion that one-half begin to menstruate between the ages of 13 and 15. Not very definite.]

† Pagen's Report in British and Foreign Med. Rev., Jan., 1844; M. Petrequin (l. c., p. 138) found that in the east of France, fecundity ceases between 45 and 50 in about one-half of the entire number of women, and between 40 and 50 in about three-fourths.

‡ Edin. Med. and Surg. Journ., Oct., 1845. Also in London Med. Gaz., Oct. 24, 1845.

§ Gas. Med., 2 Août, 1845; from Roser and Wunderlich's Archiv, 1845.

¶ For some valuable observations on the periodicity attending vital phenomena, I may refer to a series of excellent papers by Dr. Laycock in the Lancet, vol. i., 1843-3; also to his work "on the Nervous Diseases of Women," where the whole subject of menstruation is lucidly treated.

† Northern Journ. of Med., July, 1845.

\*\* American Journ. Med. Sciences, July, p. 172.

struation with violent colics, followed by *tic douloureux*, which resisted all treatment, but ceased on the recurrence of the menstrual discharge, and the patient, at the age of 90, was in the enjoyment of health, with all her faculties perfect, and with the tastes and ideas belonging to youth.

36. *Vicarious Menstruation*.—A case has been recorded\* in which a periodic discharge of blood from the ear occurred vicariously of menstruation; the discharge was preceded by a sense of weight in the head and noise in the ears, especially in the one from which the flow of blood took place. Another case is mentioned,† in which a periodic discharge of blood, corresponding with the menstrual period, took place from an ulcer on the arm. A case of vicarious menstruation, which proved fatal, has also been recorded.‡

### § IX.—Miscellaneous Subjects.

37. *Molecular movement in Cells*.—Mr. Addison§ has added further evidence of the existence of molecular movements of the granules contained in the white corpuscles of blood, in pus, and in mucous corpuscles, and he thinks that the circumstance of this molecular movement being common to the granules in each of these corpuscles is strongly in favor of this view, that the cells of mucus, pus, and lymph, are identical with the colorless corpuscles of the blood, or at least are altered forms of these corpuscles.

38. *Growth and development of the Epidermis*.—Mr. Erasmus Wilson|| adduces evidence, derived from his microscopic observations, in confirmation of the commonly received doctrine respecting the origin of the cells of the epidermis and epithelium generally, from the materials furnished by the liquor sanguinis or plasma of the blood: which fluid, passing by endosmosis through the walls of the capillary vessels and peripheral boundary of the surface, develops granules by a vital process, analogous to coagulation. On a careful examination of the inner surface of the epidermis with the aid of the microscope, he finds it to be composed of four kinds of elements, arranged in such a manner as to constitute an irregular plane, similar to a tessellated or mosaic pavement. These elements are: 1. *Granules*, which the author terms *primitive*, of a globular form, solid, and apparently homogeneous, and measuring about 1-20,000th of an inch in diameter. 2. *Aggregated granules*, having about double the diameter of the former, and apparently composed of as many of these as can be aggregated together without leaving an unoccupied space in the centre of the mass. 3. *Nucleated granules*, measuring in diameter from 1-6000th to 1-4000th of an inch, each being composed of an aggregated granule as a nucleus, enveloped by a single layer of aggregated granules, giving to the whole mass an oval or circular, and at the same time flattened, shape. Their constituent granules have acquired during this aggregation greater density, and are separated from each other by distinct interstitial spaces filled with a transparent homogeneous substance. 4. *Nucleo-nucleolated cells* pervading the deep stratum of the epidermis, and which, in their long diameter, measure from 1-3000th to 1-2500th of an inch. These cells, which constitute the principal portion, and may be regarded as the chief constituent of the epidermis, are formed from the nucleolated granules, on the exterior of which there is superposed a transparent layer, bounded by a well-defined outline; the nucleolated granule being the nucleus, and the aggregated granule the nucleolus of these primitive cells of the epidermis. The author is of opi-

\* Bulletin des Acad., Juillet, 1845, p. 174.

† London Med. Gaz., August 1, 1845, p. 610.

‡ London Med. Gaz., Aug. 8, 1845, p. 657. Much has been written within the last six months on the subject of menstruation generally, but especially in regard to its analogy with the rut of animals, although very little which can be regarded as new has been contributed. It will, therefore, be sufficient merely to refer to the following amongst other communications: an excellent series of papers on the Physiology of the Human Ovary, by Dr. Ritchie, in the London Medical Gazette, commencing May 19, 1845; an Exposition of M. Boechut's work on Generation, containing a few comments thereon, by M. Mandl, in Archives Générales de Médecine, Mai, 1845; an interesting paper on the Human Female Ovary, by Dr. Renaud, reprinted from the Monthly Journal of Medical Science, Aug., 1845; a critique on the Modern Theory of Menstruation, by a Reviewer in the Medico-Chirurg. Review, Oct., 1845, p. 525; and a Letter in the Gazette Médicale, Aug. 16, 1845, by M. Jules Béclard, who makes numerous objections to the conclusions derived from the excellent researches of M. Bischoff, whose work M. Béclard seems only partially to have read, otherwise, as remarked by M. Vogt, in Gazette Médicale, Aug. 23, he would have met with a direct answer to his objections. On the subject of corpora lutea, about which also much has been written, especially by Drs. Ritchie and Renaud in the papers above referred to, nothing essentially novel has been advanced.

§ The actual process of Nutrition, &c., 1845, p. 13.

|| In a paper read before the Royal Society, June 19, 1845, the above abstract of which is taken from the Magazine of Natural History, Aug., p. 133.

nion that the nuclei, up to a certain point, grow with the cells by the separation of the original granules from the deposition between them of interstitial matter, and also by the cleavage of the latter, and the consequent multiplication of the granules. This peripheral growth of the cells is totally different from the mode of growth described by Schwann, and explains the disappearance of the nucleus in the scales of the epidermis. The observations of the author lead him to believe that the same process of development and of growth is followed in the epithelium as in the epidermis; and he offers evidence, showing that similar arrangements take place in the cells of melanosis, in the pigment cells of the choroid membrane of the eye, and in those of the skin of the negro.

39. *Frontal Sinuses*.—Sir W. Hamilton\* has offered some interesting observations on the peculiarities of these sinuses, chiefly with the view of showing that the doctrines of the phrenologists (so far as they bear upon these sinuses) are irreconcilable with the facts of nature. Without entering into the views of the phrenologists on this question, it will be sufficient to notice the facts stated by Sir W. Hamilton. These facts are:—1. "The frontal sinus only exists in consequence of the recession of the two cranial tables from their parallelism; and, as this recession is inappreciable, consequently no indication is afforded by the external plate of the eminence or depression of the brain, in contact with the internal. 2. There is no co-relation between the existence and extent of a sinus, and the existence and extent of any external elevation, whether superciliary or glabellar; either may be present without the other, and when both are co-existent, they hold no reciprocal proportion in dimension or figure; neither is there any form whatever of cranial development which guarantees either the absence or presence of a subjacent cavity. 3. The sinuses are rarely, if ever, wanting in any healthy adult head of either sex. [Out of upwards of three hundred crania which he examined, he could not find one in which the sinus was completely absent.] 4. Although the sinus is always regularly present, yet it varies much in its extent; for whilst, on the average, it affects six or seven phrenological organs, it is, however, impossible to determine whether it be confined to one, or extended to some seventeen of these."

40. *Form and measurement of the Head*.—Dr. Knox† has published some interesting results of the measurements of skulls of various nations. There is also a long paper on the general form of the head amongst northern nations, by Dr. A. Retzius.‡

41. *Use of Glisson's Capsule*.—M. Petrequin§ suggests what seems a probable explanation of, at least, part of the purpose served by that continuation of the *tunica propria* of the liver to which the name of *Glisson's Capsule* is applied, and which accompanies the branches of the portal vein, hepatic artery, and biliary duct, along their ramifications through the substance of the liver. He regards it as destined to facilitate the portal circulation, explaining his view in the following manner:—"The liver is a compact organ, not readily admitting of being distended; there is no heart to impel the blood through the vena portæ, nor are there any valves to sustain the column of blood in it; the capacity of this vein is also greater than that of the mesenteric artery, to which it corresponds, and it is one of the vessels whose calibre is most variable, because, from its relation to the digestive organs, it must admit of dilatation when fluids are absorbed, and be enabled to contract when those fluids have passed off. These various obstacles to the portal circulation are counteracted, and the power of accommodating the capacity of the vessel to its contents is insured by its running in a fibrous sheath, and being quite independent of the tissue of the liver; it can dilate or contract as the quantity of fluid traversing it increases or diminishes, and it can also contract so as to press on the blood it contains, and thus favor its circulation."

42. *Weight of the Spleen*.—The absolute weight of the spleen, and its weight in proportion to that of the whole body, according to Huschke,|| increases rapidly after birth; and its proportionate weight soon attains its highest standard, so that in the adult it has no decidedly greater proportion to the body than it has after birth; in some cases it even decreases. It varies between 1·235 and 1·240. But its relation to the weight of the liver is proportionately greater in the adult than in the infant.

43. *Anatomical peculiarities of Children*.—The following observations by M. Bery, physician to the Stockholm Asylum for Orphans, on some peculiarities in the anatomical condition of the tissues in the early period of life, are translated in the *Lancet*.¶

\* *Med. Times*, May 31, June 7, 1845.

† *Id.*, May 3, 1845.

‡ *Müller's Archiv*, Heft 9-3, 1845.

§ *British and Foreign Medical Review*, July, 1845, p. 136.

|| *British and Foreign Medical Review*, Oct., 1845, p. 430.

¶ *Aug. 2, 1845.*



M. Bery has found that the calibre of the capillary vessels is much greater in children than in adults: this he ascertained to be the case in various viscera, such as the lungs, liver, kidneys, intestinal canal, skin, &c. The same remarks apply to the meshes of the cellular tissue and to the follicles of the intestines. These anatomical peculiarities explain the rapidity and abundance of the secretions which are observed in infancy, and are rendered imperative by the activity of the general nutrition at that age. On the other hand, this development of the capillary vessels of the meshes of the cellular tissue and the mucous follicles, readily explains the rapidity of the formation of false membranes, the abundance and tenacity of the various mucous and cutaneous discharges, and the frequency of inflammations. At the same time that the capacity of the tissues renders their engorgement easy, it also renders their disorganization slower; consequently the pathological lesions found after death are not so marked in children as in adults.

# V.

## REPORT ON THE PROGRESS OF PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY.

BY GEORGE EDWARD DAY, M.A., L.M., CANTAB.

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### § I.—Heat.

1. *Animal Heat*.—In our last Report we omitted to notice a valuable paper by Liebig,\* "On Animal Heat," because it was an essay that seemed likely to lead to considerable discussion. We now present it to our readers, with a brief notice of the arguments that have been brought forward against it.

"It is a very common prevailing opinion, that if we determine the amount of oxygen consumed in a given time in the respiratory process of an animal, and calculate how much heat this amount of oxygen would have evolved had it combined directly with carbon and with hydrogen in ordinary combustion, forming carbonic acid and water, and then further compare the result of these calculations with the amount of heat actually evolved by the animal during the same period, we shall find a considerable disparity.

"Let us assume the amount of heat given out by an animal in a certain time to be = 100, then, according to the experiments of Dulong and Despretz, the oxygen consumed by the animal in the same time would, if combined directly with carbon and with hydrogen, as in ordinary combustion, have evolved—

	Min.	Max.
"According to Dulong, only from . . .	69	to 80
"According to Despretz, only from . . .	74	to 90

"According to these calculations it would follow that the animal body evolves from one tenth to two tenths more caloric than it ought, assuming that the combination of the oxygen with certain constituents of the body (forming carbonic acid and water) is the exclusive source of the liberated heat.

"The results of the experiments and calculations of Dulong and Despretz have induced physiologists, and also many chemists, to suppose that there exists some other source of heat in the animal organism, which lends its aid to the inspired oxygen in maintaining the temperature of the living body.

"I shall endeavor to prove in this paper that this assumption of a source of animal heat, which cannot be accounted for by any known physical law, is opposed to the most positive and well established facts; and, moreover, I shall show that the amount of heat evolved by an animal in a given time, corresponds exactly with that which the oxygen consumed in the respiratory process during that time, would produce if it had combined directly with carbon and hydrogen, as in ordinary combustion.

"We possess a very simple method of determining the number of degrees of heat imparted to a definite and known amount of water by the combustion of any definite weight of carbon and hydrogen,—in other words, the combination of a definite amount of oxygen with carbon and hydrogen, forming carbonic acid and water. By the same method we may readily ascertain the amount of heat evolved by an animal, and we

\* *Annalen der Chemie und Pharmacie*, No. 1, 1845. This paper has been translated in the September number of the *Chemist*, and in the *Lancet* for February. We have adopted the latter with a few trifling alterations.

may hence calculate whether or not it be all derived from the oxygen inspired, and the formation of carbonic acid and water.

"This method of determining the amount of heat evolved by a body in combustion consists simply in burning it—having first ascertained and noted its exact weight—in a metallic vessel, surrounded on all sides by a definite and known weight of water, the temperature of which is also ascertained and noted.

"After the combustion has been completed, the temperature of the water and of the vessel is again determined, and the increase which it is found to have received shows at once the amount of heat evolved by the combustion of the substance. The amount of heat evolved by an animal in a given time may be ascertained by an exactly analogous proceeding. For this purpose the animal is made to stand in a metal vessel, surrounded by a known weight of water, the exact temperature of which is likewise known, the number of degrees of heat imparted to the water in a given time may be readily ascertained with the greatest possible correctness, and so may the amount of carbonic acid exhaled by the animal in the same space of time, as well as the total amount of oxygen which the air has lost, including the amount of oxygen consumed without entering into the formation of carbonic acid. And this is all that is necessary to express by figures—how many degrees of heat are produced in the animal organism and evolved from it in a given time, by the conversion of the inspired oxygen into carbonic acid and water, since, by the direct determination of the combustion heat of carbon and of hydrogen, we know exactly how many degrees of heat correspond to a certain and definite amount or volume of carbonic acid produced, as well as how many degrees of heat are evolved in the conversion of a certain and definite amount of oxygen into water. If we combine carbon and hydrogen, in an appropriate apparatus, with oxygen, we know that a certain amount of heat is evolved and imparted to the surrounding objects. Now, the question simply is this, whether a given amount of carbon and of hydrogen yields, in its *direct* combustion, *more or less* heat than in its *indirect* combustion in the animal organism? The experiments of Dulong and Despretz answer the latter question in the affirmative, since, according to them, a given amount of carbon and of hydrogen yields from one tenth to two tenths more heat in the indirect conversion of these substances into carbonic acid and water, in the animal organism, than would be evolved by their direct combustion.

"The apparatus used for the determination of animal heat are, in the principle of their construction, identical with those used for the determination of combustion heat, and thus we may assume that the one offers as many and as few sources of error as the other; it is therefore by no means astonishing that so much weight and importance should have been attached to Dulong and Despretz' experiments.

"I feel far from inclined to depreciate, in the slightest degree, the value and importance which these experiments necessarily deserve as the results of positive experience, but I think I am justified in considering it rather hasty and precipitate to infer from these results the existence of an additional source of heat, quite unconnected with any of those sources which our physical and chemical experiments in the formation and evolution of heat have led us to assume. For before we can properly arrive at such an inference—i. e., the assumption of this new and unknown source of heat—there are a great many questions to be answered, respecting the premises upon which it is based.

"It is evident, that if the number of degrees of heat evolved by the *direct* combination of a given volume of oxygen with carbon and with hydrogen, forming carbonic acid and water, is *smaller* than the amount of heat which the same volume of oxygen evolves when combining *indirectly* in the animal organism, with carbon forming carbonic acid, or with hydrogen forming water, the first and most obvious inference would be this, that the amount of heat which a compound containing carbon and hydrogen (a constituent of the animal body) evolves in its oxidation—i. e., in its transformation into carbonic acid and water, is *greater* than the amount of heat liberated in the combustion of carbon or hydrogen *per se*—i. e., in their elementary state. If against this it were proved that the amount of heat evolved by the combustion of an animal compound is *equal* to, or *not larger* than the amount of heat evolved by the oxidation of the combustible constituents of this compound, it is obvious that the second inference to be drawn from the results of Dulong and Despretz' experiments ought to be, that there must exist some error with regard to the assumed amount of the combustion heat of carbon and of hydrogen, upon which both these chemists based their calculations.

"Both these inferences may properly be applied and used in a critical examination of Dulong and Despretz' experiments. Dulong based his calculation of the amount of heat evolved by the conversion of the inspired oxygen into carbonic acid and water, in the respiratory process, upon the data of Lavoisier and Laplace; according to which, one gramme of hydrogen, upon its combustion into water, converts 285 grammes of ice of 0° centigrade into a corresponding amount of fluid water of 0°, and one gramme of carbon converts 96·5 of ice of 0° into an equivalent amount of fluid water of 0°.\*

"Now, since at the time when Lavoisier and Laplace made their experiments, it was assumed that in the melting of a given weight of ice as much heat is absorbed as is contained in an equal weight of water of 75°, it is evident that the melting of 285 parts of ice would require as much heat as 285 parts of water at 75° contain—i. e.,  $285 \times 75^\circ = 21375^\circ$  of heat; in like manner, the combustion heat of one grammet of carbon, according to Lavoisier and Laplace, is calculated as  $96\cdot5 \times 75^\circ = 7237\cdot5$ . Now one litre (= 1000 cubic centimetres) of carbonic acid contains 0·5404 grammes of carbon, and this amount of carbon, upon its combustion into carbonic acid, evolves 3911·45 of heat—i. e., the amount of heat required to raise by one degree the temperature of 3911·45 grammes of water; Dulong, therefore, in his experiments, could easily find, from the number of cubic centimetres of carbonic acid gas present in the air exhaled by the animal, the number of degrees of heat which ought to have been imparted to the surrounding water by the formation of this carbonic acid. One litre of oxygen (= 1·4410 grammes) combines with two litres of hydrogen (= 0·1802 grammes), forming water, and in this process 3851° of heat are liberated, according to Lavoisier and Laplace. It is obvious that 1000 cubic centimetres of oxygen consumed in the respiratory process correspond to 3851° of heat evolved, if we assume this amount of oxygen to have entered into combination with hydrogen, forming water.

"These were the data which guided Dulong in calculating the results of his experiments. With respect to his supposition—viz., that that portion of the oxygen which is absorbed in the respiratory process, without forming subsequently carbonic acid, combines with hydrogen, forming water—this is not open to any objection or doubt, since the organism, besides carbon and hydrogen, and a very minute proportion of sulphur, contains no other element capable of combining with oxygen.

"At present, we know most positively, that these data of Lavoisier and Laplace, based as they were upon the latent heat of water assumed at that time, are erroneous, since this latent heat, according to the most recent researches of Regnault, confirmed by Provostaye, is not 75°, but 79°; that is, four degrees more for every pound of melted ice. This makes for every gramme of hydrogen, 1140°, and for every gramme of carbon, 386° of heat more than originally assumed, according to Lavoisier and Laplace's calculations.

"It is obvious, therefore, that the figures by which Dulong, in his experiments, expresses the amount of heat produced in the respiratory process in consequence of the formation of carbonic acid and of water, must be corrected according to the more recent determination of the latent heat of water, and thus that they ought to be raised 1-19th.

"Despretz bases his calculations on animal heat upon the results obtained by himself in the determination of combustion heat; he found one gramme of carbon to evolve 7815° of heat, and one gramme of hydrogen to evolve 23640° of heat. In subsequent experiments† he assigns to the combustion heat of carbon 7912°, and to that of hydrogen 20624°. With regard to the latter, it differs so much from the results of his former experiments, as well as from the results obtained by Lavoisier, that we cannot admit it to be correct. With regard to the combustion heat of carbon, the figure 7912 comes as near to the corrected results of Lavoisier ( $7237 \times 386 = 7623$ ) as can be expected and desired in experiments of this kind.

"Among the papers left by the late M. Dulong, were found certain results which this chemist had obtained in the direct determination of the combustion heat of carbon and of hydrogen.‡ These results seem to bring the question concerning the origin of animal heat as near its solution as possible.

"Dulong found that one litre of hydrogen at 0° and 0·76' pressure upon combustion yields the following amounts of heat—

\* The heat is here invariably calculated on the centigrade scale.

† Annales de Chimie et de Physique, 3 série, t. xxxvii., p. 180.

‡ The gramme equals 15·4 grains.

§ Comptes Rendus, t. viii., p. 871.

3120; 3118; 3108; 3111·3; 3075.

One litre of oxygen accordingly evolves, upon its combination with two litres of hydrogen forming water, the following amounts of heat—

6240; 6236; 6216; 6222·6; 6150;

and thus the amount of heat evolved by the combination of one equivalent by weight of hydrogen may be calculated at 34734°; the difference between this figure and that of Lavoisier and Laplace (21375), upon which Dulong himself based his calculations respecting animal heat, is exceedingly great; if we assume 34734° to be the *correct* figure, it is obvious that the number of degrees of heat liberated in consequence of the formation of water, must in his calculations be assumed at 2362° higher for every litre of oxygen consumed in the formation of water.

“Now, the correctness of this figure can no longer be doubted, since Dulong’s data have been subsequently examined and confirmed by Hess. Hess found in his experiments that one litre of hydrogen of 0° and 0·76’ pressure, yields on an average 3114 of heat, and this number corresponds with the average amount of heat found by Dulong, as stated above. I have to add here, *en passant*, that this figure is still somewhat below that found by Crawford. We may, therefore, assume, from the corresponding results of all these experiments, that one gramme of hydrogen evolves in its combination with oxygen from 34743 to 34792 degrees of heat.

“With regard to the combustion heat of carbon, we are far from knowing it so positively as that of hydrogen.

“Pure carbon (diamond) has never been employed for this purpose. Dulong used wood-coal, Despretz the coal of sugar heated to whiteness—neither of these can be considered as pure carbon. The wood-coal contains ashes, and, moreover, varying amounts of oxygen and hydrogen; the coal of sugar, though far purer, yet contains, according to Marchand and Erdmann, after having been heated to whiteness, still 0·6 per cent. of hydrogen, and 3·1 per cent. of oxygen; and even after having been exposed anew to a blast fire, it retains still 0·2 per cent. of hydrogen and 0·5 of oxygen. The difficult inflammability of those sorts of coal, which are, to a certain degree, pure, forms also a great obstacle to the determination of the combustion heat of carbon. The coal must not be heated to ignition within the apparatus destined for the reception of the heat evolved, and when heated to redness previously to its being placed in the apparatus, part of it is consumed ere it reaches its destination. All the determinations of the combustion heat of carbon are, therefore, only approximate, and the resulting figures are, at all events, smaller than they ought to be, and would be, were it not for these obstacles and difficulties.

“According to Despretz, the combustion heat of carbon is 79120°.

“According to Dulong’s former experiments, in which he used an impure carbon—i. e., wood-coal—this amount is smaller; in his most recent experiments the combustion heat of carbon is calculated upon one litre of coal-vapor. He found, in four experiments,

“8009; 7540; 8040; 7843 degrees of heat; on an average, 7858.

“It is well known that chemists do not agree with respect to the exact weight of a litre of coal vapor; the amount of carbon contained in one litre of carbonic acid gas is 0·5404 grammes. Now, if we assume, with Berzelius, and the majority of German chemists, that this amount of carbon expresses the weight of half a litre of carbon vapor, we find the weight of a litre of carbon vapor to be 1·0808 grammes, and this 1·0808 will, in that case, correspond to 7858 degrees of heat, as given by Dulong. Most of the French chemists assume the amount of carbon contained in a litre of carbonic acid to express the weight of a whole litre of carbon vapor; and it is now, after Dulong’s death, hardly possible to decide whether the number of degrees of heat which, according to him, correspond to a litre of carbon vapor in combustion, refer to 0·5404 grammes, or 1·0808 grammes of carbon. If we take the latter figure as the weight of a litre of carbon vapor, we find the combustion heat of one equivalent by weight of carbon, to be 7270°, whilst, with the former, we should obtain 14540° as the result. In one case, Dulong’s determination approaches to those of Lavoisier, Laplace, and Despretz; whilst, in the other case, the amount of the combustion heat of charcoal would appear vastly higher than that which those chemists have assigned to it. It seems, however, evident, from Dulong’s determinations of the combustion heat of several compounds containing carbon and hydrogen, such as olefiant gas, ether and

alcohol, that the combustion of carbon is, at all events, higher than 7270—i. e., the result obtained by Dulong by the direct combustion of charcoal.

"We have every reason to believe that the amount of heat evolved by the combustion of a substance composed of several combustible elements, cannot exceed that evolved by the combustion of an equal weight of these combustible elements, *per se*—that is, in their elementary state, since we may reasonably presuppose that the formation of the combustible compound—i. e., the combination of these elements, has already given rise to the evolution of a certain amount of heat. Now, with the single exception of marsh gas—(and this is not entitled to much weight, as we possess no method of preparing pure marsh gas)—the combination of all the carbon compounds which have hitherto been submitted to this operation, indicates a far higher degree of heat, evolved by the combustion of carbon, than 7270.

"I will not attach any importance to the results which Dulong obtained by the combustion of cyanogen gas—(although, perhaps, they may, after all, be the most correct)—since, in Dulong's experiments on this subject, a non-ascertained amount of nitrous acid was formed during the operation; but the results obtained by the same chemist in the combustion of olefiant gas, of alcohol, and of ether, correspond so admirably with each other, that I think the determination of the combustion heat of carbon may be based upon them with far greater safety than upon results obtained by any other method.

"It would, indeed, be very difficult to point out any substances better adapted for this purpose than olefiant gas, alcohol, and ether. One litre of alcohol-vapor contains the elements of one litre of olefiant gas and of half a litre of water-vapor; half a litre of ether-vapor contains one litre of olefiant gas and the elements of a quarter of a litre of water-vapor. The elements of the latter, of course, do not participate in the combustion.

"Now, upon the supposition that 1.0808 grammes of carbon—which, in olefiant gas, ether-vapor, and alcohol-vapor, are combined with two litres of hydrogen—expresses the exact weight of one litre of carbon-vapor, it is evident that the figures resulting from Dulong's experiments, to ascertain the amount of heat evolved by the combustion of a litre of olefiant gas, alcohol-vapor, and ether-vapor, are indicative of the sum total of the amount of heat evolved by the combustion of two litres of hydrogen and one litre of carbon-vapor. Consequently, if, from this sum total, we subtract the known amount of heat evolved by the combustion of two litres of hydrogen gas, the remainder will indicate the exact amount of heat evolved by the combustion of one litre of carbon-vapor.

"The following were the results of Dulong's experiments. Olefiant gas yielded, in five experiments—

15264; 15298; 15576; 15051; 15501 degrees of heat.

On an average . . . . . 15338 " "

One litre of alcohol-vapor yielded 14375 " "

Half a litre of ether-vapor yielded 16674 " "

I have already stated above that one litre of alcohol-vapor, as well as half a litre of ether-vapor, contain the elements of one litre of olefiant gas.

"The mean of these three figures is 15462.

"Let us suppose, therefore, 15462 degrees of heat to express the amount of heat evolved by the combustion of one litre of olefiant gas, and subtract from this the known amount of heat evolved by the combustion of two litres of hydrogen gas.

Combustion heat of one litre of olefiant gas = 15462

two litres of hydrogen gas = 6213

there remains 9249

as the amount of heat evolved by the combustion of one litre of carbon-vapor, or of 1.0808 grammes of carbon.

"Accordingly, the amount of heat evolved by the combustion of one gramme of carbon will be from 8557 to 8558.

"It is true, indeed, that the direct combustion of isolated carbon seems to have yielded hitherto invariably an amount of heat inferior to this; if we take into consideration the circumstance, however, that the isolated combustion of the elements hydrogen and carbon, is liable to twice as many possible errors of observation as the combustion

of olefant gas; I think we may safely assume 8556 to be nearer the mark than any of the figures obtained by the direct combustion of isolated carbon.

"I have already mentioned that the combustion heat of carbon, as resulting from the combustion of cyanogen gas, represents even a higher figure than 8558; and Dulong's experiments on the combustion heat of the vapor of oil of turpentine, furnish additional proof that 8558 expresses most correctly the amount of heat evolved by one gramme of carbon.

"One litre of vapor of oil of turpentine yielded, in Dulong's experiments, 70607 degrees of heat. Now, as one litre of vapor of oil of turpentine contains eight litres of hydrogen gas, and five litres of carbon-vapor (the specific weight of camphene or oil of turpentine vapor is 4.764, according to Dumas), it is obvious, that upon subtracting from 70607, the known amount of heat evolved by the combustion of eight litres of hydrogen—i. e., 24848, the remainder will indicate the amount of heat evolved by the combustion of five litres of carbon-vapor (or five times 1.0808 grammes of carbon)—

70607  
24848  
45759

24848, the evolution of which is owing to the combustion of the eight litres of hydrogen contained in one litre of vapor of oil of turpentine.

there remains 45759 as the amount evolved by the combustion of five litres of carbon-vapor; the figure 9151.8 will accordingly express the amount of heat evolved by the combustion of one litre of carbon-vapor (1.0808 grammes of carbon); 8467 or 8468 will therefore express the amount of heat evolved by the combustion of one gramme of carbon, and this figure (8467—8468) corresponds, as closely as can reasonably be expected in experiments of this kind, to that obtained by Dulong as the result of the combustion of olefant gas, alcohol-vapor, and ether-vapor—viz., 8557—8558.

"It must be remarked, finally, that in Dulong's experiments, the alcohol, ether, and oil of turpentine were submitted to combustion in their fluid state, and that consequently the resulting figures are not liable to any subtraction for the latent heat of the vapors. These figures—i. e., 84793 for the combustion heat of hydrogen, and 8558 for the combustion heat of carbon—are unquestionably far more correct and precise than those upon which Dulong and Despretz originally based their calculations of the amount of heat produced in the respiratory process of animals, at the expense of the inspired oxygen—i. e., produced by the conversion of this oxygen, within the organism, into carbonic acid and water. Let us, therefore, now calculate this amount upon the basis of these corrected figures, and see what will be the result.

DESPRETZ.	Amount of heat produced by the conversion of the oxygen inspired during the same space of time, into carbonic acid and water.		
	According to Despretz' calculation, C = 7815 H = 23640	According to our corrected calculation, C = 8558 H = 34792	According to Despretz' calculation, substituting 7912 for 7815 (C) and 34792 for 23640 (H)
Amount of heat evolved by the animal in a given definite space of time.			
1 Rabbit . . . 100	90.4	107.48	102.04
2 Ditto . . . 100	85.8	101.74	96.76
3 Six young ditto 100	82.1	96.71	94.09
4 Rabbit . . . 100	86.7	101.78	96.38
5 Guinea-pig . . 100	88.8	104.45	98.97
6 Ditto . . . 100	88.9	104.53	99.00
7 Dog . . . 100	80.8	98.16	93.80
8 Ditto . . . 100	74.1	90.31	86.30
9 A young dog 100	74.5	91.30	87.40
10 Cat . . . 100	80.6	96.81	92.25
11 Pigeon . . . 100	78.8	93.10	88.26
12 Dog . . . 100	79.2	94.52	89.80
13 Cock . . . 100	79.7	94.43	89.50
14 Virginia cock 100	77.0	95.41	91.50
15 Owl . . . 100	74.6	88.50	84.00
16 Magpie . . . 100	75.4	89.20	84.00

DULONG.*	Amount of heat produced by the conversion of the oxygen inspired during the same space of time, into carbonic acid and water.	
	According to Dulong's calculation, C = 7270 H = 21375	According to our corrected calculation, C = 8558 H = 34792
Amount of heat evolved by the animal in a given definite space of time.		
1 Cat . . . 100	72.9	94.9
2 Ditto . . . 100	68.8	90.1
3 Ditto . . . 100	71.5	91.7
4 Ditto . . . 100	75.8	98.6
5 Ditto . . . 100	73.6	95.7
6 Ditto . . . 100	72.8	94.6
7 Ditto . . . 100	80.2	104.7
8 Ditto . . . 100	79.2	103.0
9 Wind-hover . . 100	71.5	97.2
10 Ditto . . . 100	78.9	104.1
11 Guinea-pig . . 100	69.4	83.6
12 Ditto, young . . 100	74.9	90.2
13 Ditto, ditto . . 100	80.0	95.5
14 Rabbit . . . 100	75.5	91.1
15 Ditto, young . . 100	83.3	101.8
16 Ditto, young . . 100	74.5	95.4
17 Pigeon . . . 100	78.7	95.9

"These figures need no comment; they prove, with unquestionable certainty, that an animal, placed in an appropriate apparatus, evolves, in a given definite space of time, exactly as much heat as the same apparatus would have received had the oxygen inspired during the same space of time been combined directly in the apparatus with

\* Annales de Chimie et de Physique, 3 série, t. 1., p. 455.



a certain definite proportion of carbon sufficient to form an amount of carbonic acid, exactly corresponding to that exhaled in the same space of time, and with a certain definite proportion of hydrogen sufficient to form an amount of water exactly corresponding to that which we assume to be formed in the organism by that portion of the inspired oxygen which does not form carbonic acid. And thus the question whence the heat of the animal body proceeds is fully answered.

"With regard to the amount of nitrogen exhaled, according to Dulong and Despretz, by the animals which served these chemists in their experiments, a simple calculation will show that the data of these chemists cannot be correct, and that the increase which they found in the volume of the air in which the animals breathed must be ascribed to some error in measuring the carbonic acid gas formed, and the oxygen gas absorbed.

"In Dulong's experiments, a dog weighing 1150 grammes exhaled, according to this chemist, in eighty minutes 0.375 litres of nitrogen gas: this makes, in twenty-four hours, 6.75 litres, or 7.46 grammes of nitrogen. Let us suppose, for a moment that this nitrogen proceeds from the body of the animal. We know that one hundred grammes of fresh meat contain four grammes of nitrogen (they contain seventy-five per cent. of water). Now let us farther assume the whole animal to be composed simply of flesh, and thus to contain four per cent. of nitrogen (and this is positively too much, since the blood and the bones contain less nitrogen than the flesh, and the fat is even entirely free from this element), seven days' breathing would finish the whole dog, leaving nothing behind except the bones, earth, and the salts contained in its organism, just as if the animal had been burnt with oxide of copper; all the other parts—hair, skin, flesh, and blood, must of necessity have become converted into gas. In Despretz' experiments, two dogs (weight unknown) are stated to have exhaled 1.097 litre of nitrogen gas in 102 minutes, and 15.4 grammes of this gas in twenty-four hours. If such were indeed the fact, each of these two animals would lose half a pound of flesh in the course of every thirty-one hours. In both their calculations I have disregarded, of course, altogether, that the animals yield urea in their urine, and nitrogen in their feces. My intention here simply is, to show that it is utterly impossible that animals should exhale such a vast amount of nitrogen as Dulong's and Despretz' statements would lead us to believe; and it is for this purpose only that I give these calculations; the conclusions to which they obviously lead, are, of course, absurd."

Liebig's views in the above essay have been opposed by several chemists, who express doubts regarding the accuracy of the figures representing the "coefficient of combustion." Thus Grassi\* asserts that we have no right to deduce the "coefficient of combustion" of a simple body from that of a compound body into which it enters, as has been done in the preceding paper, for that is to assume that a compound body develops in its combustion the same amount of heat as if the elements had been burned separately,—an assumption opposed to known facts.

Grassi further observes that respiration is not the only chemical action that gives origin to an appreciable amount of heat. Many chemical and physical actions unknown to us occur during the processes of digestion and assimilation, some of which develop heat while others absorb it. Without ascribing to animals a special calorific power, he thinks that respiration is not to be regarded as the only source of animal heat. Grassi's views regarding animal heat approximate to those of Simon. (See Simon's *Animal Chemistry*, Vol. i., p. 142.)

A theory of animal heat has been recently published by Dr. Spencer,† of Geneva College, United States. The following are his principal conclusions, as drawn up by himself:

1. The lungs perform an excretal office, on which life constantly depends, directly or indirectly aiding calorification.
2. The substance thrown off is hydrate of carbon.
3. The carbon, on coming in contact with atmospheric oxygen, combines with it, forming carbonic acid gas, which is thrown off by the lungs and skin by expiration and perspiration.

\* *Journal de Pharmacie*, Oct., 1845.

† *Vital Chemistry*. Lectures on Animal Heat; by Thomas Spencer, M. D., Professor of the Institutes and Practice of Medicine in the Medical Institute of Geneva. We have been unable to obtain the work in time for the present Report. This notice of his views is taken from a review of his work in the July number of the *American Journal of the Medical Sciences*.

4. The amount of latent heat of the oxygen gas employed, is much greater than that of the carbonic acid gas formed in the lungs, and hence caloric is set free, imparting heat to the blood and surface.

5. This free heat also combines with the water of the hydrate of carbon, and converts it into vapor.

6. The lungs and cutaneous surface aid in *regulating animal temperature*, by the conversion of water into vapor, thus conveying off any excess of free caloric in the system, by combining with it in the form of latent heat.

7. The water of the hydrate of carbon is converted into vapor in the lungs and upon the surface, precisely as when wood is burned, and hence assumes the form of insensible respiratory and perspiratory transpiration.

8. Facts appear to show that the chemical changes in both venous and arterial blood may occur, independent of the vital principles, by applying to the venous, oxygen gas, and to the arterial, carbonic acid gas.

9. The systemic red capillaries are the antagonists of the pulmonary, and are constantly decomposing carbonic acid, and with water forming hydrate of carbon; or, in other words, carbonizing the blood.

10. From this union, water and carbonic acid are transformed into a solid substance, and hence latent becomes free heat, at every point where red blood circulates.

11. The functions of the systemic red capillaries of the body in *decomposing*, and that of the small vessels of the lungs and skin in *recomposing* carbonic acid gas, reciprocally depend upon and *balance* each other; in other words, one set *carbonizes*, and the other *decarbonizes* the blood.

12. In consequence of the indissoluble link which connects the functions of respiration and calorification, the degree of temperature, the carbonic acid evolved, and the size of the lungs as compared with the bodies of animals, always bear a direct ratio to each other.

13. There is a beautiful analogy between animals and vegetables, in the decomposition of carbonic acid by the minute vessels of each.

14. This explanation shows that the great end and function of respiration is, both *directly* and *indirectly*, to aid in the all-important office of the generation and diffusion of animal heat.

The theory of respiration adopted by Dr. Spencer differs, as he remarks, essentially from that of Lavoisier, Laplace and Prout, which supposes carbon and hydrogen, or hydro-carbon, to exist in the blood, and that both become oxidized by respiration. "Hydro-carbon is a mere imaginary compound, which was necessary to complete their theory, while hydrate of carbon, as the author has shown, is an extensive triple compound." According to Dr. Spencer, the lungs are not only employed in the functions of *excretion* and *calorification*, in expelling and oxidizing the carbon of the hydrate of carbon, but are the last of the organs of *hematosis*, viz.:

1. In decarbonizing the chylous and other constituents of blood, thus fitting them for nutrition.

2. This decarbonization of the elements originally entering the animal as food, furnishes the carbon of carbonic acid, and the hydrate of carbon employed in the function of calorification.

3. That the oxides of iron are the first instruments for oxidizing and deoxidizing carbon as the important agent in calorification, while atmospheric oxygen is the last agent.

4. The protoxide of iron is the carrier of the carbonic acid from the lungs to the systemic capillaries.

5. The affinities of the iron in its circle for calorification, show that if either oxide exists as a constituent of blood, the other oxide must necessarily be formed; the *pulmonic* and *systemic* capillaries antagonizing and balancing each other in oxidizing and deoxidizing these compounds.

6. The iron of the blood is originally derived from vegetables in the form of oxide of iron.

7. This oxide of iron is converted into perchloride of iron by the muriatic acid of the gastric juice, and thus rendered soluble.

8. The perchloride of iron is reconverted, in the lungs, into the hydrated peroxide of iron by the free soda of the blood.

9. The hydrated peroxide is converted into the protoxide of the lungs, by oxidizing the carbon of the nutritious fluids.

10. The protoxide carries carbonic acid, thus formed, to the systemic capillaries for calorification, and is there reconverted into hydrated peroxide.

11. In the series of chemical compositions and decompositions of iron and carbon as explained, an exact balance is preserved in the amount of each, at all points of the organism, where employed for calorification.

12. The oxides of iron are probably employed in *oxidizing* and *deoxidizing* various other compounds than those already considered.

13. In deoxidizing sugar, &c., to form animal fat, and in oxidizing the carbon of the fat for calorification.

[The foregoing propositions present a general view of the doctrines of our author in relation to respiration and calorification; they press themselves upon the attention of the physiologist by their simplicity and apparent strict accordance with numerous well-established facts in relation to the chemical constitution of the components of the animal organism, and demand a cautious and candid examination on the part of all who have the time and talents required to test their accuracy. If, as the author very candidly remarks, every step of his inquiry shall be found to be fortified by ascertained facts, and his deductions to have been legitimately drawn, he has succeeded in pointing out and determining "a circle of vital affinities, uniting all the structures and functions of the organism, and making each set of capillaries mutually dependent on, and balanced by others, in the chemicovital changes produced in their passing currents of blood. That such a series exists," he adds, "and that the links in the chain may be demonstrated, cannot be doubted; but in consequence of the intricacy of the subject, and of my limited knowledge of experimental chemistry, a due distrust is still felt in the accuracy of the attempted determination."

## § II.—The Blood.

2. *On the effects of Food on the Blood.*—Dr. Buchanan has drawn the following conclusions on the state of the blood after taking food, from a series of experiments lately communicated to the Glasgow Philosophical Society:

1. The serum of the blood of a healthy man fasting, is perfectly transparent, and of a yellowish or slightly greenish tint. 2. A heterogeneous meal, such as that usually set on the tables of the rich, renders the serum white. 3. The whiteness may commence as early as half an hour after eating, and may continue ten or twelve, and sometimes as long as eighteen hours, according to the kind and quality of the food, and the state of the functions of primary and secondary digestion. 4. *Starch* and *sugar*, probably all vegetable substances destitute of oil, give no whiteness to the serum of the blood. 5. *Fibrin*, *Albumen*, and *Casein*, and probably protein-compounds in all their forms, if destitute of oil, give no whiteness. 6. Oils combined, whether naturally or artificially, with protein-compounds or with starch, render the serum of the blood white; probably, therefore, oils produce that effect, in whatever way taken. 7. Gelatin seems to render the serum of the blood white; this, however, cannot be considered as certainly established, as there may have been some fat in the beef-tee which was taken along with the calf-foot jelly, in both experiments on which the above conclusion rests. 8. The coagulum of the blood very frequently exhibits, after taking food, a crust of pellucid fibrin, or of pellucid fibrin dotted with more opaque particles, and with little of the contraction technically named "cupping." 9. The appearances of the coagulum just mentioned are much more common after azotised than after non-azotised food. These conclusions relating to the visible characters of the blood may be considered, with the single exception above mentioned, as well established. The conclusions which follow relate chiefly to the chemical properties of the blood, and are not worthy of the same reliance:

1. The substance described above, which Dr. Buchanan names *Pabulin*, is most abundant in the blood a few hours after taking food, sooner or later, according to the rapidity of digestion. 2. It is less abundant at the time when the food has been taken is more remote, and is small in quantity after a fast of twenty-four hours. 3. It is much more abundant after azotised, than after non-azotised food. 4. It varies in quality, floating or subsiding, according to the kind of food taken. 5. It is probably analogous in nature to the white substance which gives color to the serum of the

blood. 6. The difference between these two forms of this substance probably is, that it is sometimes combined with an alkaline or earthy salt (chloride of sodium, sulphate of soda, &c.), and sometimes with an oily body (stearate of glycerine, &c.). In the former case it seems to dissolve completely in the blood, while in the latter it is only partially dissolved, and renders the serum opaque. 7. The azotised principles of the food are probably made to combine in the digestive tube with the alkaline, earthy, and oily salts mentioned above, and thus become capable of being absorbed into the blood. 8. The alkaline and earthy compounds are probably absorbed directly by the blood-vessels, while it seems to be well ascertained that the oily compounds are absorbed through the lacteals.\*

3. On the method of analyzing Blood.—(For this process, see Art. 46).

4. Blood in Inflammation.—Polli† has continued his researches on this subject. The fibrin while circulating in the system exists in a state of fluidity, and remains so for some time, even when removed from the organism. The blood, however, always coagulates before the occurrence of putrefaction. "I have often," he observes, "and for a long time, sought for the dissolved, incoagulable blood of certain pathologists, but I have never met with a single instance in which, when left to itself for a sufficient period, and duly protected from external destructive influences, it did not at length coagulate before it became putrid. I have even more than once caused blood to coagulate which had been taken in a fluid state from the veins thirty-six or forty-eight hours after death." He adds that the rigor mortis is perfectly independent of the coagulation of the blood.

Inflammation, according to Polli, gives rise to three leading modifications in the fibrin,—1, Its quantity is increased; 2, Its resistance to coagulation is likewise increased; and 3, There is an augmentation of its "molecular rarefaction." He proposes to name the second of these modifications *bradifibrin*, and the third, *parafibrin*. The two first modifications being sufficiently known, we shall confine our observations to the *parafibrin*. The fibrin in this particular state of fluidity produces such a rarefaction of the principles of the blood, and especially of its serum, that it (the blood) is rendered specifically denser when it is defibrinated.

The following case (selected from many similar ones) affords a good illustration of this modification.

A woman eight months pregnant was attacked with pleuro-pneumonia. Venesection being performed, the blood, at the moment of its extraction, had a specific gravity 1025.62; after defibrination its specific gravity was 1026.46. Altogether she was bled eight times; on the sixth occasion the specific gravity, as the blood escaped from the vein, was 1022.68, and remained so after defibrination. On the last occasion the specific gravity was 1018.9, and after defibrination 1019.32.

From these and similar facts it might be concluded, that in certain morbid conditions the fibrin becomes rarified, or less dense; that the fibrin thus rarified communicates its tenuity to the mass of the blood; and, in fine, that the fibrin becomes of less specific gravity than the albumen. Such a conclusion would, however, be too general, for in inflammatory affections the fibrin does not always assume this character. *Parafibrin* is only one of the modifications that can be impressed on the blood by inflammation. The first effect is a mere simple augmentation of the fibrin; as the inflammation becomes more intense *bradifibrin* is produced; while *parafibrin* is only formed when the inflammatory affection has reached its acme, or at least (and this is an important reservation) when it has attained the highest point permitting of complete resolution.

The following are some of the characters by which *parafibrin* is characterized. It in general coagulates very slowly, and then only in such delicate and transparent filaments as to be hardly visible to the naked eye: in fact, while the serosity is retained in it, it resembles a gelatinous rather than a fibrinous clot. The delicate texture formed by the coagulation of this species of fibrin closely resembles the cellular network that supports the albumen of the egg, or the hyaloid membrane of the eye. Abundance of *parafibrin* is found in the bullæ arising from burns, or from the application of blisters.

To obtain it, it is only necessary to allow a little of the serum to rest in a glass for a short time. On decanting it we observe a gelatinous coagulum, which in the course

\* Med. Gaz., Oct. 10, 1845.

† Annali Universali, 1844. A sketch of his earlier researches may be seen in the Gaz. Méd., 1844, p. 204.

of twelve or twenty-four hours becomes converted into a soft fibrous membrane, which falls to the bottom of the glass.

When, in addition to the *parafibrin*, the blood contains a certain amount of ordinary fibrin or of *bradifibrin*, the coagulation of these two forms of fibrin not only takes place at different periods, but each presents a distinct and peculiar appearance. Thus we first perceive filaments of fibrin, which are white, opaque, and resemble a network of large meshes, for the most part radiating towards the centre. Amongst these filaments we can afterwards observe the transparent and gelatinous coagulated *parafibrin*.

The whole paper is well worthy of perusal. The author does not seem to be acquainted with the researches of Mulder, otherwise he might have noticed a close analogy between *parafibrin* and tritoxide of protein.

5. Zimmermann has communicated several observations respecting the blood in inflammatory affections of the respiratory organs. The following are the results of his analysis, conducted according to the method of Andral and Gavarret :

	Water.	Fibrin.	Blood corpuscles	Eos. of serum.
1.	790.0	3.0	127.0	80.0
2.	784.0	4.0	126.0	86.0
	796.0	6.0	119.0	79.0
3.	810.0	7.0	106.0	77.0
	805.0	5.0	103.5	85.5
4.	806.0	9.6	109.9	74.5
	774.0	4.0	142.0	80.0
5.	781.0	4.0	137.0	78.0
	786.0	4.0	131.5	78.5
6.	796.0	3.0	128.0	73.0
7.	794.0	3.0	123.5	79.5
8.	792.0	3.0	120.0	89.0
9.	800.0	4.0	119.5	76.5
10.	800.0	4.0	108.0	88.0
	798.0	7.0	116.0	79.0
11.	815.0	8.0	100.5	76.5
12.	806.0	3.5	100.5	90.0

If we compare the mean of these analyses with the average deduced by Andral and Gavarret from 58 analyses of the blood in similar cases, we have :

Zimmermann,	796.2	4.75	118.10	80.85
Andral,	799.0	7.30	114.10	81.00

The leading difference in these averages occurs in the fibrin. Zimmermann suggests that probably Andral and Gavarret used only buffed blood.

6. *Blood in Bright's Disease.*—In a case of albuminuria, in which the dropsy was only of a fortnight's standing, the blood was analysed by Dr. Ayres.\*

There was a firm buffy coat on the blood, a quarter of an inch in thickness. The coagulum itself was very firm, and so bulky as almost to fill the glass.

There were contained in 1000 parts :

Water	765.023
Solid constituents	234.978
Fibrin and tritoxide of protein	11.450
Fat	a trace
Albumen	65.875
Hæmatoglobulin	138.185
Albuminate of soda and salts	13.940
Osmazome	1.510

No urea could be detected in this blood, the leading characters of which were a great increase of fibrin and a diminution of the water and fat.

Dr. Ayres gives, in the same Essay, an analysis of the blood in a case of anasarca

\* *Lancet*, Aug. 2, 1845.

without albuminuria. The serum was milky, and had a specific gravity of 1016. The clot was moderately firm, rather small, and slightly buffed.

The urea amounted to about .5 in 1000 parts of blood, and was found to be diminished in the urine.

Heller\* has recently published a series of analyses of the blood, urine, and dropsical effusions in Bright's disease.

1st Case.—A man of tolerably robust appearance, aged 38 years. The disease was somewhat advanced, and there was considerable oedema. The blood was analysed on two occasions. On the first occasion it was taken by cupping from the region of the kidney. It was very fluid, but of the normal color. The clot was small and presented no peculiarity. The serum was slightly colored. Under the microscope the blood-corpuscles appeared large and swollen. The blood was tested for urea and found to contain a considerable quantity.

Five ounces were subsequently removed by venesection. The color of the blood on this occasion was rather dark, and the coagulation was perfect. The clot was of a bright red color on the surface, but otherwise dark, and there was no buffy coat. The serum was very pale and opalescent, and its specific gravity was only 1022. It contained no bile-pigment, and its reaction was strongly alkaline.

In 1000 parts were contained :

Water	. . .	805.39	
Solid constituents	. . .	194.61	
Fibrin	. . .	3.52	
Albumen	. . .	51.45	} Solid residue of serum 68.15
Fixed salts	. . .	6.70	
Extractive matter	. . .	8.15	
Urea	. . .	1.85	
Hæmatoglobulin	. . .	122.94	

2d Case. (Heller's seventh case.)—A woman, aged about 30 years, with the disease in an early stage. There was slight oedema of the feet and face, accompanied with pain in the region of the kidneys. Four ounces of blood taken from the arm presented no physical peculiarities. The specific gravity of the serum was only 1018, or 10 deg. lighter than normal serum. The clot was to the serum in the ratio of 544.75 : 455.25.

In 1000 parts of blood there were contained :—

Water	. . .	816.04	
Solid constituents	. . .	183.96	
Fibrin	. . .	2.66	
Albumen with a little extractive matter	. . .	48.03	} Solid residue of serum 56.73
Fixed salts	. . .	6.96	
Urea	. . .	1.74	
Hæmatoglobulin	. . .	124.57	

Heller's general conclusions respecting the blood in Bright's disease are that the specific gravity and the amount of solid constituents are diminished, and that the diminution is dependent alone on the decrease of the albumen, which for the most part is found in the urine, but to a less degree also in the dropsical effusions. The appearance of the blood is normal, and in its coagulation it presents no peculiarity. The serum is pale, of low specific gravity (as may be shown by the common urinometer) and contains no bile-pigment.

The fibrin and blood-corpuscles occur in the ordinary quantity. The solid residue of the serum is much diminished in consequence of the great decrease of the albumen. Urea is abundant in the blood; in the first analysis it amounted to 1.85 in 1000 parts: reckoning the whole amount of blood in the body at thirty pounds, this would contain about an ounce of urea. The presence of urea in the blood must not, however, be regarded

\* Archiv. für Physiologische und Pathologische Chemie und Mikroskopie, vol. II., p. 173.

as peculiar to Bright's disease, since it has been found in a large quantity in cholera, ischuria, and other diseases associated with suppression of urine.

The fixed salts present no remarkable declension from the normal standard, but are usually slightly below the healthy average.

The analysis of the urine in these cases will be found in a future page.

7. *Blood in diseases of the Eye.*—Zimmermann has made several analyses of the blood in cases of blepharo-blephorrhoea and ophthalmia catarrhalis [rheumat.] gastrica.

1. In a case of ophthalmia of two days' standing, accompanied with much chemosis, the specific gravity of the blood was 1051, and 1000 parts yielded 200 of solid residue. The specific gravity of the serum was 1027, and of the clot 1066.

In 1000 parts there were:

Water	798
Solid constituents	202
Fibrin	2.0
Blood-corpuscles	117.5
Solid residue of serum	82.5

The serum was of a bluish red color, and opaque.

2. The blood drawn from a patient on the third day of the ophthalmia had a specific gravity of 1052, and 1000 parts yielded 205 of solid residue. The specific gravity of the serum was 1028, and of the clot 1090.

In 1000 parts there were:

Water	795
Solid residue	205
Fibrin	2.0
Blood-corpuscles	115.1
Solid residue of serum	87.9

3. A patient on the second day of the disease yielded blood of specific gravity 1056, and 1000 parts yielded 210 of solid residue.

The specific gravity of the serum was 1030, and of the clot 1092.

In 1000 parts of blood there were contained:

Water	790
Solid residue	210
Fibrin	2
Blood-corpuscles	115
Solid residue of serum	93

4. In a similar case the blood had a specific gravity of 1054, and 1000 parts yielded 206 of solid residue. The specific gravity of the serum was 1035, and of the clot 1088.

In 1000 parts there were contained:

Water	794
Solid constituents	206
Fibrin	3
Blood-corpuscles	108
Solid residue of serum	98

5. A soldier with conjunctivitis and scleroticitis of the right eye. The specific gravity was 1062, and 1000 parts yielded 205 of solid residue. The specific gravity of the serum was 1030, and of the clot 1084.

In 1000 parts there were contained:

Water	795
Solid constituents	205
Fibrin	2.5
Blood-corpuscles	104.0
Solid residue of serum	98.5

6. In a case of conjunctivitis of both eyes, without fever, the specific gravity of the blood was 1055, and 1000 parts yielded 214 of solid residue. The specific gravity of the serum was 1036, and of the clot 1088.

In 1000 parts there were contained:

Water	786
Solid constituents	214
Fibrin	2.0
Blood-corpuscles	113.5
Solid residue of serum	98.5

7. In a case of ophthalmia of the left eye, the specific gravity of the blood was 1055, and 1000 parts yielded 210 of solid residue. The specific gravity of the serum was 1031, and of the clot 1090.

In 1000 parts of blood there were contained:

Water	790
Solid constituents	210
Fibrin	2.0
Blood-corpuscles	114.7
Solid residue of serum	93.3

Three days having elapsed, venesection was again ordered. The specific gravity of the blood was then 1050.8, and 1000 parts yielded 198 of solid residue. The specific gravity of the serum was 1027.7, and of the clot 1078.

In 1000 parts there were contained:

Water	809
Solid constituents	198
Fibrin	2.0
Blood-corpuscles	116.2
Solid residue of serum	89.8

8. The blood of a soldier on the third day of the disease had a specific gravity of 1052, and 1000 parts yielded 204 of solid residue. The specific gravity of the serum was 1031, and of the clot 1080.

In 1000 parts there were contained:

Water	796
Solid constituents	204
Fibrin	2.5
Blood-corpuscles	106.7
Solid residue of serum	93.8

Four days afterwards the specific gravity was 1050.5, and 1000 parts yielded 200 of solid residue. The specific gravity of the serum was 1028, and of the clot 1078.

In 1000 parts there were contained:

Water	800
Solid constituents	200
Fibrin	2
Blood-corpuscles	108
Solid residue of serum	90

After an interval of 10 days he was again bled. The specific gravity was 1050, and 1000 parts yielded 196 of solid constituents. The specific gravity of the serum was 1027, and of the clot 1078.

In 1000 parts there were contained:

Water	804
Solid constituents	196
Fibrin	3.5
Blood-corpuscles	97.0
Solid residue of serum	95.0



A glance at the leading character of the blood in these eight cases, will show that in these patients the blood was in a state of hypnosis. (See Simon's Animal Chemistry, vol. i., p. 287.)

8. *Intermittent Fever*.—The blood of those who have lived for some time in malarious districts, and who have suffered from the ordinary endemic diseases, as intermittent fever, scurvy, or organic disease of the spleen or liver, has been examined by Salvagnoli. It is usually very black, and coagulates imperfectly, no firm tenacious clot being produced. A true buffy coat is never observed.

In four cases in which the blood was analysed by Professor Cozzi, the fibrin occurred in its normal quantity, but the fat and albumen were diminished. In three of these cases there was a great excess of cholesterin, and scarcely any phosphates; in the remaining case (No. 3) these salts were abundant, while no cholesterin was found.

The following are the results of Cozzi's analysis :

	1.	2.	3.	4.
Water and salts . . .	737.67	705.49	732.45	809.17
Fibrin . . .	2.20	2.06	2.29	1.96
Fat . . .	.15	.21	.13	.16
Albumen . . .	48.71	56.61	47.59	53.10
Blood-corpuscles . .	211.27	235.63	217.54	135.61

The blood in (1) was taken from a soldier with severe intermittent fever, accompanied with considerable enlargement of the spleen and liver.

The blood in (2) was taken from a man with quartan fever, whose spleen and liver were much enlarged, and the latter the seat of excruciating pain.

The blood in (3) was taken from an artillery-man, who for five years had been stationed in a malarious district. It was a case of intermittent fever, with slight enlargement of the liver, but extraordinary hypertrophy of the spleen.

The blood in (4) was taken from a man with angina tonsillaris, who had suffered from the fever for a long time : spleen enlarged and very painful.

In addition to the excess of cholesterin in the majority of these cases, bile-pigment was observed in the blood. The connexion between the occurrence of these constituents and the deranged state of the portal system is sufficiently obvious.

9. *Scrofula*.—The blood in this disease has been carefully examined by Mr. Nicholson, who has communicated to the "Northern Journal of Medicine" the result of numerous analyses.

The analyses were conducted on Andral and Gavarret's method.

	Water.	Fibrin.	Blood corpuscles.	Residue of serum.
1.	816.5	3.0	101.0	79.5
2.	820.2	2.8	98.0	79.0
3.	820.5	2.4	98.0	79.1
4.	821.0	3.0	97.0	79.0
5.	823.0	2.5	96.5	78.0
6.	839.0	2.3	80.0	78.7
7.	840.0	2.0	79.0	79.0
8.	839.0	2.0	79.0	80.0
9.	855.3	1.2	63.5	80.0
10.	855.2	1.8	64.0	79.0
11.	854.3	1.7	65.5	78.5
12.	855.0	2.0	64.0	79.0

The blood-corpuscles were few, light colored, and irregular, and there was sometimes an appearance as if their circumference was notched and divided.

A glance at the above table will show that the blood in this form of disease falls under the category *spancemia*, the physical and chemical characters of which are thus described by Simon.

*Physical Characters*.—The blood is very fluid ; it is sometimes of a dark or even violet, and sometimes of a bright color ; it usually coagulates imperfectly, sometimes not at all. The clot is small, soft, diffuent, and neither covered with a true nor false

buffy coat. The serum is generally of a bright yellow color, but sometimes of a dark yellow, or even red tint. The specific gravity of the blood is considerably diminished.

**Chemical Characters.**—The amount of fibrin and of corpuscles is diminished; the amount of residue of serum is either normal or diminished; the proportion of water is higher than in healthy blood; the amount of salts in the serum is sometimes normal, sometimes diminished.

[We have now laid before our readers the principal analyses of blood that have appeared since the publication of our last Report. Chemistry in its various applications to medicine is so rapid in its progress that we must content ourselves with a limited selection from the varied stores set before us in the English, French, and (more especially) German periodicals. If it should be deemed, by any of our readers, that analyses are being uselessly multiplied, we would remind them "that a single isolated analysis is of very little intrinsic value in substances of so varying a nature as the blood or urine. The only method by which we can hope to throw any light upon the leading alterations that occur in these fluids is by the comparison of the results obtained from a series of analyses; and if we were desirous of merely ascertaining so simple a fact as the determination of the pathological states in which either an excess or a deficiency of fibrin and blood-corpuscles occurs in the blood, and the relation that exists between such pathological states and such modifications of the vital fluid, science would be more benefited by the investigation than by the performance of a few very perfect analyses which did not tend to elucidate any particular point."\*]

**10. Menstrual Fluid.**—Since the publication of our last Report, an analysis of this secretion has been made by Dr. Lethaby. The menses were retained by an imperforate hymen, which, when cut into, permitted the escape of about forty ounces of a thick and almost black fluid, having the appearance of treacle. When examined under the microscope, with a power of 300, it was found to be quite free from fibrin, but numerous corpuscles were observed floating in it. The greater number of them were altered blood-corpuscles, but there were also noticed the exudation of inflammatory globules (of Gerber and Gluge), lymph-corpuscles, mucus-corpuscles, epithelium-scales, and minute granules resembling mere dots.

The fluid had an alkaline reaction, and was perfectly miscible with water; when heated a little below 212° it formed a firm coagulum.

It was analysed in accordance with Simon's directions and was found to contain:

Water	857.4
Solid constituents	142.6
Fat	5.3
Albumen	69.4
Globulin	49.1
Hæmatin	2.9
Salts	8.0
Extractive matters	6.7

Another analysis was performed with the view of estimating the quantity of mucus, blood-corpuscles, and soluble albumen, and gave the following results:

Water,	857.4
Solid matters insoluble in cold water, and consisting of mucus, lymph, and exudation globules with epithelium,	22.6
Solid matters soluble in cold water, and consisting of saponified fats and blood-corpuscles,	53.8
Albumen,	52.7
Salts,	7.0

These must be taken as the constituents of the fluid. It can, however, hardly be regarded as the normal menstrual secretion; from the length of time in which it remained in the vagina, it became mixed with an excess of mucus, and acting as an irritant, produced the inflammatory globules that were observed in it.†

\* Simon's Animal Chemistry, vol. i., p. 89.

† Lancet, Aug. 2, 1845.

### § III.—*Digestion, and the Fluids of the Chylopoietic Viscera.*

11. *Healthy Saliva.*—Mialhe\* has recently announced the discovery of an active principle in the saliva analogous, in its physical and chemical characters, to diastase. It is solid, white or greyish-white, amorphous, insoluble in alcohol, but soluble in water and spirit. The directions for obtaining it are the following:—Filter saliva, and treat it with five or six times its weight of absolute alcohol, adding it as long as any precipitate occurs. This animal diastase is insoluble, and falls in white flocks, which must be collected on a filter and dried. It forms about 2.00 of the whole saliva. A series of experiments were subsequently instituted by Lassaigne, with the view of ascertaining whether pure saliva, obtained from the parotid duct, acted like diastase on starch, at the temperature of the human body. The results of these experiments are as follows:—

a. Human saliva, and that of the horse, at the temperature of 103°, exert no solvent power on starch, which remains quite unaltered in its physical and chemical properties.

b. At a higher temperature (158° to 167°), maintained for three hours and a half, horse's saliva acts on starch exactly as water does; that is to say, the granules become tumid and distended, without being changed into either dextrine or glucose.

c. Human saliva obtained from the mouth has no action on starch at the temperature of the body; but converts it rapidly into dextrine at a temperature between 158° and 167°, and subsequently converts the dextrine into glucose.

d. During the digestion of raw amylaceous substances, the saliva being at the temperature of the animal body, cannot exert the influence attributed to it by Mialhe; it can merely, as most of the older and modern physiologists maintain, contribute to moisten the alimentary bolus, and dissolve such of its principles as are soluble in water.

12. *Morbid Saliva.*—Scherer has analysed the saliva of a girl aged 15 years, suffering from a scorbutic affection of the mouth. There was copious pytalism, the saliva amounting to about forty ounces in twenty-four hours. The secretion was very liquid, fetid, and alkaline. The sp. gr. was 1004.

In 1000 parts, there were contained:

Water	988.8
Solid constituents	11.2
A caseous-like substance, precipitable by acetic acid	6.5
Fat taken up by ether	0.6
Extractive matter and pytalim	1.8
Carbonate of soda	1.2
Chloride of sodium	0.7
Phosphate of lime	0.4

On examining with the microscope the fluid immediately after it was discharged, there were found in it a large number of infusoria, and a peculiar confervoid-like vegetation.

13. *Bile.*—In our last Report we noticed the circumstance of a large proportion of sulphur occurring in taurin. The details of the analysis by which Redtenbacher was led to the discovery have not yet been published, but the accuracy of the observation has been further established by Professor Gregory,† of Edinburgh. "I find," he observes, "that when taurin is deflagrated with nitre, and the heated mass dissolved in water, and neutralized with an acid, nitrate of baryta causes a very copious precipitate of sulphate. We may, therefore, assume the fact as proved."

Frerichs‡ has recently analysed bile, both in health and disease; but he does not seem to be aware of the discovery to which we just alluded, and, in all probability, his analyses were made previously. The following are the physical characters of healthy human bile, according to Frerichs:

In color, it is always deep brown; but, when seen in thin layers, it has a brownish yellow tint. It is very fluid, being viscid only in new-born infants. The sp. gr. varies from 1032 to 1040. On examining, with the microscope, bile from the gall-bladder, with which, of course, a certain amount of mucus is mixed, there are observed:—  
1. Transparent or greyish round vesicles, about 1-700th of a line in diameter. They

\* *Lancette Française*, April, 1845.

† *Outlines of Chemistry*, p. 566.

‡ *Hannov. Annal.*, 1 and 2, 1845.

disappear on the addition of alcohol or ether, and are removed by filtration. 2. Conical yellow bodies, about 1-140th of a line in length, and about 1-300th or 1-400th of a line in breadth, apparently devoid of nuclei; these are epithelium cells from the gall-bladder. 3. Here and there irregular dark granules, which disappear on the addition of a solution of potash; apparently pigment-cells. 4. Occasionally minute crystals of cholesterin, occurring as colorless rhombic tablets. The chemical characters are shown in the two following analyses. The bile in these cases was obtained from healthy men, killed by severe accidents:

	1.	2.
Water	86'00	85'92
Solid constituents	14'00	14'08
Bicarbonate of soda	10'22	9'14
Cholesterolin	0'16	0'26
Margarin and olein	0'32	0'92
Mucus	2'66	2'98
Chloride of sodium	0'25	0'20
Tribasic phosphate of soda	0'20	0'25
Basic phosphate of lime	}	}
" " magnesia		
Sulphate of lime	0'02	0'04
Peroxide of iron	traces.	traces.

14. *Morbid Bile.*—After briefly noticing the effects of age, nutriment, climate, constitution, &c., on the biliary secretion, Frerichs proceeds to the consideration of the influence of disease on the bile. We have only space for the two following analyses,

	Bile in Pneumonia.	Bile in Chronic meningitis.
Water	94.60	95.98
Solid constituents	5.40	4.02
Bilate of soda	4.16	2.63
Fat	0.42	0.20
Mucus and salts	1.00	1.21

15. *Gastric Juice*.—In our last Report we noticed the researches of Bernard and Barreswill in connexion with this secretion. It was there shown that they believed that the active principles of gastric juice were free lactic acid and an organic matter, which is precipitated and destroyed by a temperature of about 190°. In a subsequent communication\* they assert that the digestive powers of this organic matter vary according to the nature of the medium in which it is dissolved, according as it is acid or alkaline. Thus in the gastric juice, which is acid, it dissolves nitrogenous matters, as fibrin, gluten, albumen, &c., while it has no action upon baked starch; but if the gastric juice is rendered alkaline by the addition of a little carbonate of soda, it rapidly dissolves the starch, while it has lost the power of dissolving nitrogenous substances. These physiological properties being exactly those of the saliva and pancreatic fluid, it became an interesting point to ascertain if a change in the reaction of those fluids would cause an alteration in their properties, as was observed with the gastric juice. The authors state that on acidulating the saliva and pancreatic fluid, which are naturally alkaline, their ordinary mode of action is inverted, and they are rendered capable of dissolving meat and nitrogenized matters, whilst they have lost the power of dissolving starch. Hence they conclude that an organic principle, which is the agent of digestion, exists in the gastric juice, saliva, and pancreatic fluid; and that it is the nature of the chemical reaction alone which causes the physiological action to vary.

The importance of the subject must be pleaded as an excuse for the following somewhat lengthy extract from a paper by Dr. R. D. Thompson. The conclusions without the experiments on which they are based would be comparatively valueless.

"As it appeared to be a matter of importance in the investigation of the changes occurring in the stomach during digestion, in order to prevent complication of the phenomena, that the food should be as simple as possible, I have chosen for the

\* *Comptes Rendus*, July 7, 1845.

experiments about to be detailed, cases in which animals were fed on vegetable food alone. In general, the species of food selected was porridge, or a mixture of oatmeal and water, well boiled. In such experiments as I have seen detailed in reference to the free acid of the stomach, there appears to have been too little attention paid to the possible results which might arise from a difference in the nature of the food. Thus the products of the digestion of starch we should naturally expect to be different from those of the digestion of animal fibrin or albumen, since we know that lactic acid can be produced by a modification of starch, although the same change does not attend the decomposition of the animal substances enumerated. For example, in the preparation of starch an acid liquor collects on the surface of the vessels in which the starch is digested, and in the formation of *souans* from oat-husks and water by steeping, an acid liquor is developed,—in both instances a consequence of the production of lactic acid at the expense of starch; while in the German dish, *sauerkraut*, the same acid is generated by an analogous action. I do not at present intend to discuss the nature of the acid which presents itself in the stomach during the digestion of animal food, but simply to detail the results of a series of experiments upon the changes produced on vegetable food and starch during digestion. I shall merely content myself with stating, that I have never found a volatile acid in the stomachs of animals which were digesting animal food alone, while in these cases I have invariably found an acid to be present which was fixed at the temperature of 212 deg., and even considerably higher.

“It does not appear an invariable rule that acid reaction should always characterize the liquid present in the stomach during digestion, as appears from the following experiments. On the 11th July, 1844, the different stomachs of a sheep killed twenty-four hours after partaking grass, contained between two and three pounds of finely-divided green matter, exhibiting a pulpy consistence, but being entirely destitute of either an acid or alkaline reaction. The pulpy masses were tested in each of the stomachs, with the same negative result, and they were afterwards mixed together, diluted with distilled water and filtered, but still without any effect on litmus paper. Experience teaches us, that to determine the presence of a volatile acid in the stomach, great care must be taken in reference to the mode in which the distillation is performed, since if the heat of an open fire is applied to the retort, an indication of the presence of hydrochloric acid will be found in the liquid contained in the receiver, by the addition of nitrate of silver. The following experiment affords evidence in favor of this position, and it might be strengthened if necessary, by the results obtained by other experimenters. The contents of the stomach of a dog which had been fed on porridge made of oatmeal and water, and which afforded an acid reaction with litmus paper, were mixed with distilled water and filtered. On exposing the distilled liquor to the heat of an open fire, in a retort, a fluid passed over possessing an acid reaction, and becoming opalescent on the addition of a solution of the nitrate of silver, and without disappearance in contact with nitric acid; a result plainly indicative of the presence of chlorine in some form in the liquor of the receiver, but as appeared by the subsequent inquiries, to be explained by the fact that muriate of ammonia must have been carried over by the vapor of water, in consequence of the excess of heat. To determine in a satisfactory manner, therefore, the presence of a volatile acid, it is necessary to distil the fluid contents of the stomach in a water-bath. With this consideration in view the following experiment was made. A pig was fed on potatoes and greens, and was killed in half an hour after the food was swallowed. The stomach was slit open, and as much of the fluid contents as possible were poured off; the solid contents were then digested in cold distilled water. Both fluids were filtered and mixed, each previous to being united being found to exhibit an acid reaction with litmus infusion. To ascertain whether the statement made by a French physiologist (Blondlot) is correct, viz., that the acid of the stomach cannot be saturated with chalk, a quantity of pure carbonate of lime was prepared by dissolving Irish limestone in hydrochloric acid, precipitating a small portion of phosphate of lime and iron which it contains, with caustic ammonia, and then throwing down the lime with the carbonate of ammonia, collecting the precipitate on a filter, washing it well with distilled water, and heating it to redness in a platinum crucible. An excess of this chalk was then added to the filtered fluid of the stomach, and the mixture was allowed to remain for twenty-four hours, disturbed only by frequent agitation. It was then filtered, and found to have been completely neutralized. Having often repeated this experiment on various specimens of gastric

fluid with the same effect, I can only account for the different result obtained by Blondlot, by supposing that he had attempted to complete his neutralization of the fluid while it was in a heated state, and that possibly, if acetic or lactic acids were present, these acids might resist neutralization at an elevated temperature, since it has been found by manufacturers of pyroligneous acid that they cannot succeed in forming a neutral acetate of lime at a temperature approaching that of the boiling point by chalk alone, but that they require to add milk of lime in order to overcome the acid reaction. Blondlot has deduced the inference from his experiments, that the stomach owes its acid reaction to the presence of an acid phosphate of lime; but as the experiments now detailed do not coincide with those of the French physiologist, it is sufficiently obvious that they do not support him in his conclusions.

"Being thus foiled in corroborating the deduction of Blondlot, that phosphoric is the free acid of the stomach, it was requisite to look out for another source of the acidity of the gastric fluid. It was therefore necessary to test the muriatic or hydrochloric acid theory, as propounded by the sagacity of Dr. Prout.\*

"The contents of the stomach of a pig which had been fed on porridge two hours before being killed, were mixed with cold distilled water and filtered. Six fluid ounces of this fluid, which was quite clear and limpid, were introduced into a retort, and distilled in a warm bath. The distillation occupied several hours; three ounces of fluid were distilled over, which possessed the peculiar smell of such fluids, and reddened infusion of litmus slightly. The three ounces of fluid remaining in the retort had a strongly acid reaction, and gave no appearance of acetic acid on the addition of chloride of iron. From twelve ounces of another portion of the same gastric fluid, four ounces of fluid were distilled over, by the heat of the water-bath, which presented the same characters as those of the distilled fluid just described; but in neither instance could a trace of hydrochloric acid be detected by nitrate of silver.

"With the liquor remaining in the retort, three experiments were made to determine the possible amount of free hydrochloric acid, on the supposition that the preceding experiment did not serve as evidence to prove the impossibility of its presence. Three equal portions of the fluid were measured out, to the extent of two fluid ounces in each portion.

"1. To the first portion, a solution of nitrate of silver was added until a precipitate ceased to fall; pure nitric acid was then mixed with the liquid, and the temperature raised to the boiling point. The precipitate was filtered, washed, and weighed.

"2. The second portion was evaporated to dryness, and ignited; the residue was dissolved in water, and precipitated by nitrate of silver, the solution being acidulated with nitric acid, and brought to the boiling point.

"3. The third portion was exactly neutralized with caustic potash, evaporated and ignited; the residue dissolved in water, and the solution precipitated by nitrate of silver.

"The results of these experiments are indicated in the following table, in grains:

Exp.	Weight of chloride of silver.	Weight of chlorine.	Weight of hydrochloric acid.
1.	78.1	1.95	2.00
2.	1.17	1.79	1.84
3.	7.97	1.99	2.04

"The atomic weights here employed are Dr. Thompson's:—

Oxygen	.	.	.	.	= 1
Hydrogen	.	.	.	.	= .125
Chlorine	.	.	.	.	= 4½
Silver	.	.	.	.	= 13½

"The correspondence between the first and third experiment shows that, in the first, no organic substance had been in union with the silver, which was precipitated by chlorine alone, and that there is no evidence from these results of free muriatic acid being present. The conclusion is the reverse, since, if any free muriatic acid had been neutralized by the potash, the third experiment ought to have given an inferior quantity of chloride of silver, because the sal ammoniac ought to have been sublimed. The potash which was added, I conceive, in the third experiment, united with an organic acid; the salt formed was decomposed by the incineration, and the potash

\* See Phil. Mag., S. 2, vol. 1v., pp. 3 and 190.

united to the chlorine previously, in union with ammonia; for that sal ammoniac or a volatile muriate was present, is proved by the second result.

"It is well known that Dr. Prout, by similar experiments, drew the conclusion that free hydrochloric acid was present in the stomach. That distinguished chemist, however, omitted the experiment which I have described. Indeed, he could not have made it successfully under the circumstances in which he operated, because the gastric juice, in his experiments, was not exposed to a heat that could coagulate and separate the albuminous matters, which would then have combined with the oxide of silver, and have complicated the result. In the gastric juices employed in the preceding researches, however, nothing was present but soluble starch, or dextrin and sugar, which formed obviously no compounds with silver, insoluble in boiling nitric acid. It is possible, therefore, in the experiments of Dr. Prout, who determined the total amount of chlorine in the gastric fluid by supersaturating with potash, igniting and precipitating with nitrate of silver, that he had formed cyanide of potassium, which would precipitate cyanide of silver along with the chloride, unless the precaution were taken, not merely to add nitric acid, but to boil the solution after the addition of the acid, since cyanide of silver is insoluble in, or, at least, not wholly decomposed by cold nitric acid. I offer this explanation, originally proposed by Leuret and Lassaigne, because, from my knowledge of Dr. Prout, I am quite certain his experiments were most accurately made. Indeed, the testimony of all succeeding experimenters who have obtained the same results, is sufficient to establish his accuracy, without the addition of any confirmation on my part. It is even possible that, in cases where the food is different, the acid may be of the nature described by Dr. Prout.

"The experiments which have been detailed, seem to demonstrate that no free hydrochloric acid existed in the stomach of the animal, under the circumstances described, since no acid could be distilled over at a temperature greatly above that at which this acid boils when sufficiently concentrated, while the fluid in the retort became more intensely acid, in proportion as the distillation proceeded. A portion of the liquid from the retort was evaporated to dryness, and heated to a temperature exceeding 300 deg., without giving out acid fumes; the residue was digested in water, and still retained an acid reaction. The solution of the residue was easily saturated by carbonate of lime, and was not precipitated by chloride of calcium, indicating the absence of biphosphate of lime (contrary to the views of Blondlot), and likewise of free sulphuric acid.

"In another experiment the gastric juice was evaporated to dryness in the water-bath, and treated with alcohol and oxide of zinc with the necessary precautions; prismatic crystals were obtained corresponding with lactate of zinc, but in too minute quantity to admit of analysis, the only demonstrative argument. The preceding experiments appear to show, however, that the free acid of the stomach, in the digestion of vegetable matter at least, of all the known acids, alone corresponds with the lactic. To determine the nature of the volatile acid, which, however, appears to be present always in minute quantity, a portion of gastric fluid was distilled, and the product was obtained in three distinct receivers. Their characters, as determined by infusion of litmus, were as follows:

				Infusion of litmus.
1st product of distillation	amounted to	1	oz.	bright red color.
2d	"	"	1 1/4	oz. paler than preceding.
3d	"	"	1	oz. slight red color."

"From these observations, it would therefore appear that the greatest amount of volatile acid was carried over at first, and that as the distillation proceeded its amount in the retort gradually diminished, indicating that the acidity was not due to the decomposition of lactic acid or its eduction by the vapor, but rather to the presence of acetic acid. The quantity present, was, however, trifling, since the distilled product of a large amount of gastric fluid could never be detected in a state of effervescence on the addition of carbonate of soda."

"We regret that from press of matter we must defer the consideration of the formation of fat (which may be now regarded as settled), and an important paper by Budge on the production of sugar in the organism, to our next Report.

§ IV.—*Milk.*

16. The colostrum or milk secreted immediately after delivery, has been recently studied by Clemm\* and Davy.† Clemm especially noticed that the alkaline reaction speedily disappears. He has found the colostrum become acid in the course of three hours.

According to Davy, the colostrum of the cow differs from ordinary milk in several respects, especially in its richer yellow color, in its being less liquid, of greater specific gravity, and in coagulating when heated. From the latter property it has been supposed by some physiologists to contain serum. Dr. Davy, however, shows that this fluid does not enter into the composition of the colostrum, and that its coagulability by heat depends on a peculiar modification of its caseous principle. The milk selected was from a healthy cow that calved for the first time on the 19th of July, and was drawn about an hour and a half afterwards, the udder having begun to be distended about three weeks previously. Its appearance under the microscope differed principally from that of common milk, in presenting larger oil-globules,—a very few irregular flakes, probably epithelium-scales,—a little granular matter, like curd, and a small number of granular corpuscles,—the granular bodies of the colostrum first described by Mandl, the largest of which were about  $\frac{8}{4000}$ ths of an inch in diameter. The nature of these bodies seems to be somewhat doubtful, whether they are aggregation globules, formed chiefly of albuminous matter, or large oil-globules, with particles of curd, or even of oil attached to their surface: from their apparent specific gravity, and some other circumstances, Dr. Davy is disposed to adopt the first opinion; when colostrum mixed with water is put by in a cool place, after a few days, when the greater part of the cream has collected at the surface, a sediment is found at the bottom, consisting chiefly of these globules. It reddened, slightly, litmus paper. Its specific gravity, carefully ascertained before any separation of cream had taken place, was found to be 1075, and as high as 1080, after a portion of its cream had risen, and had been removed. To determine the degree of temperature at which it coagulated when heated, a portion of it, contained in a glass tube, was immersed in water, the temperature of which was gradually raised. At 160° Fah. it was unaffected; at 163° it coagulated: the coagulum was rather soft, but admitted of being inverted without flowing; it yielded readily to gentle pressure. It did not become hard when boiled, nor was its consistence materially increased by boiling. It may be deserving of mention, that the neutralization of the little free acid it contained, by the addition of sesquicarbonate of ammonia, had no marked effect on its coagulation by heat. It was coagulated by rennet, and more readily than common milk. In a comparative experiment, while the latter required a temperature of 110°, the former underwent the change at the temperature of the atmosphere, then about 65°. The coagulum of the colostrum was much softer than that of common milk, and the proportion of whey which separated from it was very much less. Mixed with ordinary milk and heated, the colostrum acted like rennet; twelve measures of the colostrum mixed with forty-six of milk, formed a soft coagulum, when the temperature of the mixture was raised nearly to the boiling point. The colostrum was coagulated by all the acids that he tried on it, and this at ordinary temperatures, as the acetic, muriatic, nitric, and sulphuric; and also by the citric, tartaric, and oxalic, when mixed with it in the state of powder. The coagulum it formed with the acetic and the mineral acids was soft, and of a grumous consistence; that which it formed with the solid vegetable acids was firm, like strong jelly, and diaphanous. When the mineral acids were added in large excess, the coagulum was dissolved, leaving the butyraceous part, which rose to the surface; ammonia, in the form of aqua ammoniæ, added largely in excess, formed a gelatinous mass of pretty firm consistence, which did not dissolve on immersion in water. The colostrum left at rest underwent change slowly. After three days it still retained throughout its yellow hue; a part only of its cream had risen at the surface. After seven days, the lower part had become nearly the color of ordinary milk, retaining its liquidity, and having acquired increased facility of coagulating when heated, whilst its upper part was of a richer hue, and less fluid, being covered with a thick pellicle of the consistence of cream-cheese. This had the peculiar smell of cream-

\* Handwörterbuch der Physiologie, vol. ii., art. "Milch," by Scherer.

† Transactions of the Medico-Chirurgical Society, 1845.



cheese, and was spotted with mildew, consisting of that kind of byssus which forms on cheese. After thirteen days, the inferior white portion had coagulated, having acquired the consistence and the properties of soft curd—the part above it having undergone little apparent change, that immediately over the curd retaining its yellowness or semifluidity; and the butyraceous cheese-like crust preserving the appearance before noticed, with increased firmness and increase of mildew. Mixed with water (about two parts of water to one of colostrum), and agitated, and then allowed to remain at rest, cream rose to the surface, and curd formed and subsided, leaving, after about a week, a transparent, or nearly transparent fluid, between the supernatant cream and the sediment of curd. This fluid was acid, and held some curd in solution. It had a cheesy smell, was not rendered turbid by boiling, nor by acetic or the citric acid, but yielded a precipitate with the three mineral acids; and when kept, a white crust formed on its surface. The formation of this crust was accompanied by a disagreeable smell, similar to that of decaying cheese, but rather more offensive, partaking of the putrid odor, owing, probably, to the presence of some granular corpuscles. When the crust was separated by filtration, a fresh one formed on the fluid in a few days, and this successively for many days. The crust or pellicle consisted chiefly of little cylindrical masses rounded at their extremities, about 1-1000th of an inch in length, by about 1-2000th in width. After the fluid had ceased to yield this pellicle, it was rendered turbid by nitric acid, as is also the whey of ordinary milk, whether coagulated by rennet, or spontaneously on its becoming sour by the absorption of oxygen. Other specimens of colostrum which Dr. Davy examined, afforded similar results. He noticed two in particular, the specific gravities of which were ascertained with care, and the degree of temperature at which they coagulated. The one was from a cow that calved in September, and was drawn almost immediately after; its specific gravity was found to be 1070. Whilst still warm, it reddened litmus. It was pretty firmly coagulated at  $160^{\circ}$ ; at  $150^{\circ}$  it formed a soft coagulum; and at  $140^{\circ}$  it became thicker. At the lower temperatures, a much longer time was required for the effect to be produced than at the higher. The other specimen was from a cow that calved in December, and was drawn about a quarter of an hour after.

It was less thick than the colostrum usually is, was of sp. gr. 1057, and coagulated at about  $162^{\circ}$  deg. What are the inferences to be drawn from the preceding experiments? Do they show that the peculiarities of the colostrum are not dependent on the presence of serum; and, in brief, that the colostrum is destitute of serum? The effect of rennet on it, which does not coagulate serum,\* the effect of the vegetable acids on it, and the changes which it undergoes on keeping, when partially exposed to the action of the atmosphere, are the facts most to be insisted on. And in corroboration, I may mention the results of trials on the heating of mixtures of common milk and serum in different proportions. Serum, in certain proportions, occasions, like the white of egg, the coagulation of milk, giving rise to custard; but it requires a pretty large proportion—five parts of serum with fifty-five of milk, even when boiled, have no effect; and even when the former was increased to ten and the latter reduced to fifty, the mixture did not coagulate till its temperature was raised to about  $195^{\circ}$ . Whilst all these results are opposed to the idea that serum forms a part of new milk, they favor the conclusion that the caseous portion of the colostrum is in a state somewhat different from its ordinary condition in the milk of cow; modified in some manner, either in consequence, it may be, of a slight difference in composition, or owing to the influence of the other ingredients of the milk with which it is mixed, especially the granular bodies, if admitted as aggregation corpuscles, which may perform the part of rennet in promoting its coagulation, and the butyraceous ingredient, more abundant in it than in common milk, separating more slowly, and which must protect it more powerfully from the action of the atmospheric air, and from the changes consequent on the absorption of oxygen. And that the caseous portion of the milk does admit of modification, and that not inconsiderable, is shown in a remarkable manner, on comparing it, as existing in the human milk and in cow's milk; in the latter, even in its ordinary condition it is readily coagulable, whilst in the former it resists this change, whether acted on by acids or rennet, and yet is easily obtained by means of evaporation, when freely exposed to the air, and without evaporation, from the slow and long-continued

\* See *Researches Physiol. and Anat.* II., p. 97: the experiments related there have been repeated with the same negative result.

action of atmospheric air. A portion of milk from a healthy young woman, five weeks after delivery, of sp. gr. 1033, kept in a stoppered phial, to which air had access, a thin slip of paper having been placed between the stopper and its neck, and kept in a dark place, of about 55 deg. temperature, from November till May, had lost its milk-white hue, and deposited curd as well as thrown up cream. Strained, the whey was found of sp. gr. 1020, and 8.1 grains of dried curd were obtained from 312 grains of milk. The whey reddened litmus paper, and was not coagulated either by boiling or by nitric acid. The curd was very like that which constitutes the chief portion of the alvine evacuation of infants at the breast.

Physiologically considered, the most marked circumstances belonging to the colostrum, are the concentration of nutritive matter in it; the greater facility of its coagulation by rennet, compared with older milk, and its greater power of resisting change when exposed to the action of atmospheric air. These are qualities which may be eminently serviceable, viewing it as the first food of the young animal. Its easy coagulation may suit it to the stomach, in which probably the gastric juice, at first, is in small quantity, and feeble. Its power of resisting change, and remaining semi-fluid, may adapt a part of it to the intestines, to promote the removal of the meconium, whilst its concentration as nutritive matter may fit it to perform for the calf the same part the substance of the egg serves, which enters the intestines during the latter stage of foetal development in the instances of birds, reptiles, and fishes. The change which takes place in the cow's milk, after calving, is not unfavorable to this view of the uses of the colostrum. Recurring to the first example, of the milk of the cow which calved in July,—that drawn after 24 hours, was of sp. gr. 1033, was less thick and less colored, and coagulated when heated to about 180 deg. The milk of the following morning was of sp. gr. 1038, did not coagulate, even when boiled, subjecting it to heat five hours after it was drawn: but after having been kept about thirty hours, then it coagulated like the preceding, at about 180 deg. Milk of the following morning, drawn on the 21st of July, about sixty hours after calving, was of sp. gr. 1033, differed hardly perceptibly from common milk in appearance, and did not coagulate on boiling, even after having been kept about fifty-four hours at a temperature little below 70 deg. and by day amounting to that.

If the special use of the colostrum of the cow is such as Dr. Davy infers, it may be expected that the first milk of other animals will be found to be similar in its properties, at least of all those the young of which, like the calf, are born fully formed and vigorous, with good use of their limbs almost immediately after birth. The new milk of the ewe, of the mare, and of the sow, Dr. Davy states, is as rich and thick, and in the instance of the first two coagulates when heated. But whether the milk of the sow has the same property, he was unable to ascertain. He states, on the authority of Mr. Gulliver in reference to the milk of the giraffe, that a small quantity "drawn within an hour after the young one was born (May 20, 1841), was excessively rich in fat-like cream, not rendered clearer by any quantity of ether, and became thicker or clotted in a watch-glass over a candle." Whether the first milk of those animals, the young of which are born helpless and feeble, as of the carnivora, is also like the preceding, cannot be at present determined, for want of facts. Dr. Davy is disposed, however, to conjecture that it is similar. This conclusion is founded on analogy, having found that the first milk of the bitch is so, coagulating when heated, and yielding a large proportion of animal matter (35.2 per cent.) when evaporated to dryness. There was not sufficient to determine its specific gravity. In the instance of the carnivora, it may be requisite for the first milk to be rich, from the manner in which these animals feed, having to leave their young to procure food, and to be absent, it may be, an uncertain time. And in accordance with this is the fact, that the human milk, the first drawn, is not unusually rich, and does not coagulate when heated; at least these are the results of the few trials of it made by Dr. Davy. The milk of a healthy young woman, who had been confined five weeks, nursing her first child, he found of the sp. gr. 1033; it yielded on evaporation 10.22 per cent. of solid matter. The first milk of a healthy woman, *ætat.* 40, after giving birth to her sixteenth child, was of sp. gr. 1033, and yielded on evaporation 12 per cent. solid matter. The first milk of another woman was of sp. gr. 1022. Examined four days after, this woman's milk was found to be of sp. gr. 1035, and to yield on evaporation 11.6 per cent. solid matter.

17. Clemm has recently published the following analyses of human milk:

	The 4th day after delivery.	The 9th ditto.	The 19th ditto.
Water . . . . .	879.848	885.818	905.809
Solid constituents . . . . .	120.152	114.182	94.191
Butter . . . . .	42.968	35.316	33.454
Casein . . . . .	35.333	36.912	29.111
Sugar of milk and extractive matters	41.135	42.979	31.537
Salts . . . . .	2.095	1.691	1.939

18. *On the effect of temperament on the Milk.*—It has been long believed that the milk of fair women is inferior in its properties to the milk of brunettes. As far as I am aware, the only analyses bearing on this point are those of L'Heretier. He selected two females of equal age, and made them submit to the same diet and mode of life. The following are the results of his analyses:

	A Blonde, aged 22.		A Brunette, aged 22.	
	1.	2.	1.	2.
Water . . . . .	892.0	881.5	853.3	853.0
Solid constituents . . . . .	108.0	118.5	146.7	147.0
Butter . . . . .	35.5	40.5	54.8	56.3
Casein . . . . .	10.0	9.5	16.2	17.0
Sugar of Milk . . . . .	58.5	64.0	71.2	70.0
Salts . . . . .	4.0	4.5	4.5	4.5

He appears to have selected the analyses that presented the most marked contrast; for he observes, that if he had taken the mean of all his analyses, the difference between the amount of the solid constituents in the two cases would have been less marked, the average ratio being 120 : 134.

19. L'Heretier has likewise investigated the changes produced in the milk by a prolonged sojourn in the breast. The two following analyses illustrate the effect thus produced. The milk in each analysis was afforded by the same woman: in the first case it had remained in the breasts for forty hours; in the second it was obtained after the infant had been sucking for some little time.

	1.	2.
Water . . . . .	901.1	858.0
Solid residue . . . . .	98.9	142.0
Butter . . . . .	34.0	36.5
Casein . . . . .	1.9	13.0
Sugar of milk . . . . .	58.5	78.0
Salts . . . . .	4.5	4.5

20. *Milk of the lower Animals.*—In the milk of a goat, Clemm found:

Water . . . . .	865.175
Solid constituents . . . . .	134.825
Butter . . . . .	42.507
Casein . . . . .	60.321
Sugar and Salts . . . . .	44.065

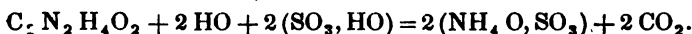
In the milk of a bitch, fed entirely on flesh, he found that the solid constituents consisted chiefly of casein and butter, but still gave undoubted indications of the presence of a little sugar. Dumas, on the other hand, asserts that the milk of carnivorous animals fed strictly on flesh yields no sugar.

#### § V.—Urine.

21. *On the detection and estimation of Urea.*—Ragaky has directed attention to a point worthy of notice in relation to the detection of urea by the microscope. He finds that the most clearly defined crystals are obtained from a solution of nitrate of urea in moderately concentrated pure nitric acid. For this purpose, the urea is in the first place to be separated from the substance under examination in the usual manner by means of alcohol and subsequent concentration in the water-bath; a small portion of it is then dissolved in about three or four drops of tepid nitric acid upon a watch-

glass, and subsequently allowed to cool; the crystals of nitrate of urea formed in this process are extremely well defined, and may be readily distinguished with a microscope of a linear magnifying power of 200. The experimenter should take care to use the nitric acid in sufficient quantity to leave a mother liquid upon the separation of the crystals, since without this the latter will not appear very distinctly. The crystals of nitrate of urea form very thin rhombic plates of laminæ, in which the acute angle is replaced by a small plane. Some of these plates swim isolated in the mother liquid, whilst another portion is found united into layers, assuming an imbricated arrangement. A characteristic property of these crystals is that they disappear with effervescence on the addition of fuming nitric acid.

With regard to the quantitative determination of urea, Ragsky observes that there is this great objection to its separation either as a nitrate or oxalate, that both those salts are perceptibly soluble, which prevents on the one hand their complete precipitation, and on the other hand their perfect washing, on which latter account they retain a certain amount of extractive matter. No other compound of urea being known, adapted for its quantitative determination, Ragsky endeavored to apply the products of its decomposition for this purpose. After several experiments made to this effect, with chlorine and with nitrous acid, he found that concentrated sulphuric acid answers the purpose best. For this purpose, a mixture of one part of urea, with from three to four parts of concentrated sulphuric acid is introduced into a flask, and exposed to the heat of a sand-bath which must not exceed  $572^{\circ}$  to avoid loss of ammonia. The decomposition of urea commences at  $383^{\circ}$  and the evolution of carbonic acid gas is very lively at  $392^{\circ}$ . In this process one equivalent of urea assumes the elements of two equivalents of water, and transposing with the latter is converted into two equivalents of carbonic acid which escape as gas, and two equivalents of ammonia which remain in combination with the sulphuric acid.



He determined, in this manner, accurately-weighted portions of pure urea dried at  $212^{\circ}$  deg., and determined the ammonia subsequently in the form of ammonio-chloride of platinum. The following numbers will show how approximately urea may be determined in this way.

1. 0.2612 grammes of urea yielded 1.9323 grammes of ammonio-chloride of platinum corresponding to 0.2598 grammes of urea.\*

2. 0.3139 grammes of urea yielded 2.3175 grammes of ammonio-chloride of platinum, corresponding to 0.3116 grammes of urea.

3. 0.2716 grammes of urea yielded 2.0400 grammes of ammonio-chloride of platinum, corresponding to 0.2743 grammes of urea.

To ascertain how far the presence of extraneous matters might interfere with the accuracy of the results, sugar was mixed with the urea, but the results were unaffected. The next point was to ascertain whether the extractive matter would yield ammonia under these conditions. For this purpose Ragsky precipitated 120 grammes (nearly 4 ounces) of fresh and healthy *urina sanguinis*, with acetate of lead, after having previously separated the uric acid by means of some hydrochloric acid. The precipitate was mixed with water, decomposed by sulphuretted hydrogen, and the yellow fluid thus produced evaporated to a syrup, and charred with sulphuric acid. The charred mass was subsequently extracted with water, the solution evaporated, and finally treated with alcohol and bichloride of platinum. This process gave no indication of the presence of ammonia. Having thus ascertained that the extractive matters, which are normally present in urine, exercise no adverse influence on the quantitative determination of urea by means of sulphuric acid and bichloride of platinum, he next proceeded to determine by this method the amount of urea present in divers samples of urine, in order to compare the results with those obtained by the ordinary methods. He found, after several experiments, that 7 grammes (a little more than 5 drachms) of urine required about 3.5 grammes (or half the weight) of concentrated sulphuric acid. If less of the acid be taken the charred mass will readily dry up, and some loss of ammonia will be incurred in consequence. The mixture of urine and sulphuric acid is kept in a moderate state of ebullition, there is a great evaporation

\* The English reader will see the accuracy of the result more clearly by reducing the gramme to grains. From 4.023 grains used in the experiment, 4.001 were recovered.

of water, and the fluid turns black. The temperature rises higher and higher, until at about 392°, there ensues evolution of carbonic acid gas in small bubbles. The cessation of this disengagement of gas indicates that the urea present in the analyzed urine is completely decomposed. The black residue is then thoroughly extracted with water and the solution filtered. The clear and urine-yellow filtrate is finally evaporated in the water-bath, and the sulphate of ammonia treated with alcohol and bichloride of platinum.

Since urine contains salts of potash and ammonia, which will, of course, likewise precipitate upon the addition of bichloride of platinum, it is necessary to determine the exact proportion in which these salts are present in the urine under examination. For this purpose a separate weighed portion of urine is precipitated with bichloride of platinum, and the amount of precipitate subtracted from the former.

Two samples of the urine of seven grammes each, treated according to this method, yielded 0.202 grammes of urea or 2.88, and 0.199 grammes of urea or 2.84. Fourteen grammes of the same urine was treated according to the ordinary plan; they yielded 0.617 grammes of nitrate of urea, or 2.15 of urea. The extractive matters of the urine yielded no ammonia.

These experiments prove that the method of determining urea in the form of ammonio-bichloride of platinum yields much more accurate results than the plan usually adopted; it may, therefore, in many cases be advantageously employed with this precaution, that all substances likely to interfere with the accuracy of the process (as uric and hippuric acids, albumen, &c.) be previously removed. It might be advisable in certain cases to separate the urea in the first place by means of oxalic acid, and then to decompose the oxalate with sulphuric acid.

The following table may save trouble in calculation.

1 atom of ammonio-chloride of platinum corresponds to	0.134498 of urea
2 " " " "	0.268996 "
3 " " " "	0.403494 "
4 " " " "	0.537992 "
5 " " " "	0.672490 "
6 " " " "	0.806988 "
7 " " " "	0.941484 "
8 " " " "	1.075984 "
9 " " " "	1.210482 "

The author concludes his paper by an acknowledgment of the kind assistance of Liebig.

A series of similar experiments instituted by Heintz, have just appeared in the November number of Poggendorff's *Annalen*. We shall notice them in our next Report.

22. *Albumen in urine*.—The following method of determining the amount of albumen has been recently proposed by Heller,\* and offers several advantages.

A small quantity of the urine (from 20 to 10 grains) must be carefully weighed, and its solid residue accurately determined. In this way we estimate the per centage of solid residue. Another portion must be rapidly heated to incipient ebullition in a small narrow-mouthed flask. The mouth must be then closed, in order to prevent the escape of vapor, and the liquid when cold strained through a moderately fine linen cloth. The strained fluid is thus obtained perfectly clear, the albumen remaining on the linen as a snow-white magma. By treating a small quantity with nitric acid, we may be certain that the albumen is completely separated. The amount of the solid residue yielded by the strained fluid is determined, and the per centage calculated. The difference gives the per centage of albumen. If extreme accuracy is required, the flask with its contents may be weighed both before and after ebullition, and a correction made for the escaped vapor. In case the fluid should be alkaline, it must be previously acidulated with acetic acid.

23. *Oxalate of Lime*.—Many specimens of oxalic urine give a precipitate with salts of lime, insoluble in acetic acid, and consisting of oxalate of lime. This is often dependent on the presence of oxalate of ammonia, and delicate acicular crystals of this salt may be occasionally noticed during spontaneous evaporation, on the border of the capsule.

\* Archiv für phys. und path. Chemie und Mikroskopie, vol. i., p. 192.

Lehmann states that he has very frequently met with oxalate of lime in healthy urine, and that it often occurs in large quantity in cases of tuberculosis, arthritis, and especially of osteomalacia, or softening of the bones. He has likewise met with it in endocarditis, and other acute diseases. He states that the crystals are neither octohedra nor cubes, but four-sided double pyramids, which, in their projection under the microscope, appear as very minute cubes, or as somewhat larger octohedra. He further believes that a portion of the oxalate of lime is held in solution by lactic acid, and advises that, if the urine be very acid, it should be neutralized, boiled, and allowed to cool slowly, before looking for the crystals.

24. *Urine in Special Diseases. Pneumonia.*—Heller\* has recorded a singular case in which the urine emitted an odor of hydrosulphate of ammonia, and deposited a sediment of urate of soda, during this disease.

The patient was a boy aged 14 years, with pneumonia in the right lung. The peculiar odor of the urine was first observed on the tenth day of the disease. The secretion on that day was copious, of a light yellow color, very turbid, and deposited an abundant clay-color sediment. This sediment, when examined under the microscope, was found to consist of clear and beautifully-defined large globules studded with numerous spines, mixed with smaller, star-like objects of the same form. There were also a few epithelium-scales and mucus-corpuscles. The urine had a strongly alkaline reaction: its specific gravity was 1018.

Heller noticed the following reactions:—

a. Acetate of lead produced at once a very dark-brown color, and, finally, a blackish-brown precipitate of sulphuret of lead.

b. Perchloride of iron (which seems to be the best test for sulphuretted hydrogen in urine, since pure sulphuret of iron is thrown down, while the precipitate, caused by the former test, contains the chloride, &c.) rendered the secretion almost black.

c. Nitrate of silver showed that the chlorides were in great excess.

d. Nitrate of baryta indicated an abundance of sulphates.

e. Ammonia showed that the earthy phosphates were normal.

f. Nitric acid and heat indicated the existence of traces of albumen.

The urine contained, in 1000 parts:

Water and hydrosulphate of ammonia	951.98
Solid constituents	48.02
Urea	12.21
Free uric acid	no trace
Albumen	traces
Urate of soda (in the sediment)	1.80
Extractive matters with a large amount of hydrochlorate and carbonate of ammonia	27.40
Fixed salts	6.61

As the fixed salts contained a mere trace of chloride of sodium, and nitrate of silver added to the urine showed that the chlorides were in excess, it is clear that nearly all the chlorine must be referred to the hydrochlorate of ammonia. That the sediment consisted of urate of soda, was proved chemically as well as microscopically. The uric acid was determined by the ordinary test; and the soda, by incinerating a portion in a platinum spoon, dissolving the white residue in dilute sulphuric acid, evaporating, and obtaining crystals of sulphate of soda.

On the following day (the eleventh), the odor remained nearly unchanged, but acetate of lead and perchloride of iron showed that the amount of hydrochlorate of ammonia was diminished. There was a small flocculent sediment, composed of muriate of ammonia, mucus, and fragments of epithelium, but entirely free from urate of soda. The urine now contained a normal amount of uric acid, and about as much albumen as on the preceding day.

On the twelfth day, the peculiar odor was very faint; and on the thirteenth it altogether vanished. The urine was still alkaline, but gradually resumed its normal characters.

\* Archiv für physiolog. und patholog. Chemie, vol. I., 24.

There was nothing in the treatment to account for the production of the sulphuretted hydrogen; and it can hardly be ascribed to the decomposition of the small quantity of albumen in the urine.

Zimmermann once detected fibrin in the urine of a patient with pneumonia on the third day. The secretion was of a fiery-red color, but deposited no sediment.

25. *Hepatitis*.—Herzog\* has recorded the case of a woman, aged 44 years, in whom the principal symptoms were pain in the left lobe of the liver, and vomiting. The urine was of a saffron color, but contained none of the ingredients of the bile. Its specific gravity was 1035·7, and 1000 parts yielded 68·84 of solid residue, 55·15ths of which were urea.

26. *Peritonitis*.—Scherer† analysed the urine in three cases of febris puerperalis. The urine was usually of a fiery-red color, sometimes neutral, and often alkaline (or, at least, it rapidly became so); it deposited a mixed sediment of pus, mucus, and urate of ammonia.

Two analyses gave the following results:

	1.	2.
Water, . . . . .	956·63	960·24
Solid residue, . . . . .	46·37	39·76
Urea, . . . . .	10·00	12·42
Urate of ammonia, . . . . .	2·04	0·84
Alcohol-extract, . . . . .	12·54	9·34
Water-extract, . . . . .	8·40	10·23
Soluble salts, . . . . .	6·69	6·34
Earthy phosphates, . . . . .	0·80	0·62
Albumen and mucus, . . . . .	2·60	Mucus alone 0·54

In the third case the urine resembled buttermilk, and was loaded with urate of ammonia; it contained:

Water . . . . .	937·00
Solid residue . . . . .	63·00
Urea . . . . .	6·70
Urate of ammonia . . . . .	3·20
Alcohol-extract . . . . .	19·02
Water-extract . . . . .	27·20
Salts . . . . .	6·31

Bouchardat has published an analysis of milky urine passed by a woman with this disease. It contained no traces of sugar or casein, the appearance being due to a large amount of urate of ammonia. It is moreover remarkable for the large quantity of fat and of albumen. It contained:

Water . . . . .	940·9
Solid constituents . . . . .	59·1
Urea . . . . .	12·4
Uric acid . . . . .	1·5
Albumen and mucus . . . . .	29·2
Fat . . . . .	2·5
Alcohol-extract with lactates, &c . . . . .	5·3
Alkaline sulphates . . . . .	2·7
Phosphate of soda, and biphosphate of ammonia . . . . .	4·2
Alkaline chlorides . . . . .	0·8
Earthy phosphates . . . . .	0·5

It must be observed that this urine was clear on emission, and only became turbid on cooling.

27. *Bright's Disease*.—The following is Simon's account of the microscopic characters of the urinary deposit in this disease.

"I have recently analysed the urine of a young man 21 years of age, suffering from

\* Buchner's Report, 1844.

† Untersuchungen, &c., p. 72.

Bright's disease, which was remarkable for the large quantity of albumen it contained. He had been attacked with anasarca and ascites, and the urinary secretion was diminished to about twelve ounces in twenty-four hours; the urine was of a dark-yellow color, had an acid reaction, and formed a whitish mucous sediment, which, when examined under the microscope, appeared to consist, at least for the most part, of long, articulated tubes, similar to those of the *conservæ*, which were in part filled with a dark granular matter; there were, moreover, many globules filled with the same matter, which resembled Gluge's inflammatory globule; there were also mucus- or pus-granules, and in one instance a slight quantity of very beautifully crystallized yellow uric acid. I have since examined the sediment in various cases of this disease, and find that this appearance is by no means uncommon. To the naked eye sediments of this nature resemble a little mucus, but on carefully pouring off the urine and examining the deposit under the microscope we observe:

"1st. Mucus-corpuscles of the ordinary size, more or less granular, and decidedly nucleated. 2dly. Pavement epithelium, from the mucous membrane of the bladder. 3dly. Blood-corpuscles. 4thly. Round dark vesicles, apparently filled with granular matter, and varying in diameter from  $\cdot 0006$  to  $\cdot 0009$  of a French inch. They strongly resemble Gluge's inflammatory globule. 5thly. Tubes composed of an amorphous matter, resembling coagulated albumen. That these tubes have in most cases an actual capsule, and are cylindrical, may be seen by inclining the stage, when they will rotate in the fluid in which they are floating. In some the capsule appears to be absent, and we can then see an amorphous, finely granular mass, adhering in a cylindrical form. Some of these tubes are full, others empty. The former contain a granular matter, darker at some points than others, and containing cells and vesicles, similar to mucus-corpuscles. The diameters of these tubes vary from  $\cdot 0011$  to  $\cdot 0006$  of a French inch.

"I have satisfied myself, beyond a doubt, that they are derived from the epithelium investing the tubes of Bellini. Whether they are present as a consequence of Bright's disease, or whether they occur in other renal affections, must be decided by further observations: my present experience leads me to believe that they are contemporaneous with a certain amount of albumen in the urine, but that blood-corpuscles need not necessarily be present with them."

These tubes occasionally present a twisted appearance. The diagnostic value of this form of sediment is uncertain; Schönlein regards it as an undoubted sign of Bright's disease; Scherer\* has, however, observed it during the period of desquamation succeeding scarlatina; the same observation has been made of Lehmann, and I have myself observed it in various cases associated with a congested or irritated condition of the kidneys.

Schlossberger has recently published a case in which, as the disease progressed, cerebral symptoms occurred with maniacal paroxysms and perfect unconsciousness, the paroxysms usually lasting for about twelve hours. The urine excreted before one of the paroxysms, and likewise that excreted during the first hour after the same paroxysm, was submitted to analysis.

The urine, in both cases, was of a pale-yellow color, faintly acid, somewhat turbid, and deposited a sediment of epithelium mixed with the tubes already described; in the course of eight hours there was also a considerable deposit of uric acid. The specific gravity of the former urine was 1011.6, and the secretion contained in 1000 parts:

	Before the paroxysm.	After the paroxysm.
Water . . . . .	942.0	931.3
Solid residue . . . . .	58.0	68.7
Urea . . . . .	7.6	4.5
Uric acid with mucus . . . . .	2.6	5.2
Alcohol-extract with salts . . . . .	19.5	20.5
Water-extract with earthy phosphates . . . . .	10.1	21.9
Albumen . . . . .	17.9	17.0

In the 2d specimen there was a very large quantity of mucus.

In the case of albuminuria, before noticed, in which the blood was analysed by Dr. Ayres, the urine was found by the same chemist to contain, on two separate occasions †

\* Untersuchungen, &c., p. 57.

† Lancet, Aug. 2, 1845.



	1.	2.
Water . . . . .	962.336	930.57
Solid constituents . . . . .	37.634	69.43
Urea . . . . .	4.827	18.80
Uric acid . . . . .	not determined	4.50 !
Albumen . . . . .	10.049	21.71
Salts . . . . .	4.443	8.76
Various organic matters	18.325	14.60

The urine in Bright's disease has been recently studied by Heller.

a. In the case noticed in p. 339, of the man aged 38 years, the urinary secretion was much diminished. The urine was turbid, of a dark yellow color, very acid, sp. gr. 1017, and deposited a slight, finely flocculent sediment, consisting of albuminous fungi, pavement epithelium, the peculiar cylindrical forms observed in Bright's disease, mucus-corpuscles, and a tolerably large number of blood-corpuscles.

On the addition of nitric acid, albumen with a violent tint was precipitated; hence the urine contained a large amount of uroxanthin.\*

In 1000 parts there were contained:

Water . . . . .	948.0
Solid constituents . . . . .	52.0
Urea . . . . .	6.1
Uric acid . . . . .	no trace
Fixed salts . . . . .	3.6
Extractive matters and uroxanthin	23.9
Albumen with some hæmatoglobulin	18.4

The greater part of the salts consisted of sulphate of potash; only slight quantities of chloride of sodium and phosphate of soda were present, and after the removal of the albumen, not a trace of earthy phosphates could be detected.

No hippuric acid could be obtained from the urine, and as uric acid was likewise absent, the acidity (which in this case was very marked) could not be dependent on these acids. Heller concludes, from various observations, that the acid reaction is dependent on the presence of the uroxanthin.

A week afterwards the urine was again analysed. The secretion was still diminished, was very turbid, of a pale reddish color, and formed a flocculent reddish sediment. The specific gravity was 1010, the reaction acid, and the composition of the fluid nearly the same as when previously examined.

At the expiration of another week, and just before the patient's death, the secretion was still diminished, and the urine rapidly became putrid. The specific gravity was 1011, urea was present in very small quantity, and the sediment contained much pus; in other points the urine remained the same as before.

b. The patient was a man aged 40 years, with considerable œdema of the whole body.

The urinary secretion was much diminished. It was examined on several occasions principally in reference to the salts.

The urine was of a pale yellow color, acid, and of specific gravity 1018. There was a slight deposit consisting of colorless uric acid crystals, much epithelium cylinders, albuminous fungi, and a few mucus-corpuscles. The urine contained a large quantity of albumen, very little urea, and only traces of uric acid. The salts amounted to 7.4 in 1000 parts, and contained an excess of sulphates with a diminution of chloride of sodium.

On the following day the organic constituents were similar; the sediment, however, contained, in addition, some granular cells (the inflammatory globules of Gluge).

The urine was subsequently analysed some days afterwards. It presented the same appearance as before, and the deposit was similar. The reaction was acid, and the specific gravity 1017.

In 1000 parts there were contained:

\* Uroxanthin is a peculiar yellow pigment, recently described by Heller, yielding by oxydation, uroglan and urothodin. We shall return to this subject in our next Report.

Water	.	.	.	958.0
Solid constituents	.	.	.	42.0
Fixed salts	.	.	.	9.4

c. A middle-aged woman with considerable œdema.

The urine was diminished in quantity, was of a dull yellow color, turbid, faintly acid, and of specific gravity 1017. It deposited a sediment consisting of numerous epithelium scales and cylinders, albuminous fungi, and a few uric acid crystals. The urine contained a large amount of albumen, which, precipitated by nitric acid, had a faintly violet tint, indicating the presence of uroxanthin. The urea, uric acid, and salts, were much diminished; the latter amounting to no more than 3 in 1000 parts of urine. Of the various constituents of the saline residue, the chloride of sodium was the most diminished.

d. The urine of a patient of Professor Lippich's, with considerable œdema, was analysed. It was of a faint yellow color, turbid, acid in its reaction, with a specific gravity of 1006, and deposited a slight sediment of epithelium cylinders, mucus-corpuscles, albuminous fungi, and a few crystals of uric acid.

In 1000 parts there were contained :

Water	.	.	.	985.2
Solid constituents	.	.	.	14.8
Organic matter	.	.	.	13.6
Fixed salts	.	.	.	1.2 containing hardly a

trace of chloride of sodium.

e. A patient aged 28 years, who first exhibited symptoms of Bright's disease while in the hospital, in consequence of a broken arm from a fall. The spinal cord likewise appeared somewhat injured by the accident.

June 12, 1844. The urine was much diminished in quantity, scarcely amounting to a pound in the twenty-four hours: it was of a bluish green (or very deep bottle-green) color, turbid, and deposited after a short time a flocculent light-blue sediment. After standing for a longer period, a dark-blue sediment was gradually thrown down, while the supernatant fluid was yellow.

The surface of the urine was covered with a stiff film of uroglaucin, which presented a beautiful copper-like brilliancy when the light fell on it. With refracted light it appeared of a dark-blue color, and arranged in stellar groups. The sediment, when examined under the microscope, was found to consist of a great quantity of albuminous fungi, and minute crystals of ammoniaco-magnesian phosphate, together with groups of uroglaucin of a magnificent blue color, more or less crystalline in its structure: a peculiar modification of pavement epithelium was likewise observed, oval or nearly circular, with large nuclei and nucleolar corpuscles, frequently arranged in groups; and lastly, cylinders with a little pus.

The reaction of the urine was strongly alkaline, and its sp. gr. 1013.

On the addition of nitric acid the urine became of a clear blue color, and albumen with a violet tint was precipitated, which, on standing, became of a darker blue, while the supernatant fluid was of a yellowish hyacinthine color.

Alcohol slowly added, so as to form a layer on the surface, took up an azure coloring matter. On thoroughly mixing the alcohol with the urine, albumen with a beautiful blue tint was precipitated, while the fluid remained of a hyacinthine color.

Ammonia communicated a brown color to the urine.

On the addition of a salt of silver to the acidulated urine, there was no precipitation of chloride of silver, but when added to neutralized urine a coffee colored tint was developed, indicative of uroxanthin.

On the addition of a salt of baryta there was a slight violet-color precipitate of sulphate of baryta.

On evaporating the urine there was left a residue of a dark-blue color, and bright blue spots were observed on the edges of the capsule. It was washed with water, in order to separate the urea, and then extracted with cold spirit of 0.830, which dissolved the urrhodin, and formed a carmine solution. (This substance might likewise have been taken up by ether.) On boiling the residue with alcohol, a solution of uroglaucin was obtained, which, on cooling, formed beautiful ultramarine-blue crystals.

The amount of urea was very small, and there was no uric acid or chloride of

sodium; on the other hand, there was a large quantity of carbonate of ammonia, and a moderate amount of albumen. The earthy phosphates, phosphate of soda, and sulphate of potash, were present in very diminished quantities. Uroglauclin and urrhodin were present to a large amount.

The urine passed on the following morning (amounting to a little above two ounces) was submitted to analysis. It was of a bottle-green color, turbid, and deposited a sediment which, when examined under the microscope, was found to contain the crystals of uroglauclin, and indeed all the constituents noticed the preceding day.

The urine was strongly alkaline, emitting an urinous ammoniacal odor. The sp. gr. was 1013, and the reactions with nitric acid, alcohol, &c., the same as before. There was, however, a larger amount of albumen. Uroglauclin and urrhodin were likewise present in abundance.

The urine contained in 1000 parts:

Water	971.2
Solid constituents	28.8
Urea	3.81
Uric acid	no trace
Fixed salts	3.80
Uroglauclin, urrhodin, uroxanthin, extractive mat- ters, and carbonate of ammonia	14.30
Albumen	9.89

Chloride of sodium was altogether absent; the other salts were diminished in nearly similar proportions.

Death occurred the same evening about six o'clock. Shortly before that event, nearly two ounces of urine were removed by the catheter. The secretion had lost its previous color, and was of a deep citron yellow tint; it was turbid, and deposited a perfectly white sediment, composed of all the previous ingredients, with the exception of uroglauclin. It was acid, and remained so for twenty-four hours, although exposed during part of that time to the sun's rays. Its sp. gr. was 1012.

From the examination of the urine it seems clear that the blue uroglauclin and red urrhodin are products of oxidation of the peculiar yellow color—uroxanthin. For the "native" urine was intensely yellow, and did not contain either in solution or in the sediment, a trace of either uroglauclin or urrhodin. On the addition of nitric acid there was a white precipitate of albumen, which gradually assumed a violet tint, and after standing for some time became of a deep blue color. On the addition of this acid the urine became first of a carmine tint, it then became of a violet color, and ultimately of a rich blue; and during these changes it deposited uroglauclin, presenting the appearance of bright powdered ultramarine, but under the microscope exhibiting a crystalline form. On the surface of the urine there was formed the same coppery film that was noticed as forming on the blue urine, and the microscope detected crystals of uroglauclin in it. Cold alcohol when added to the sediment took up urrhodin, assuming a brilliant carmine tint.

Hence it seems to follow that the acid urine, which was of a pure yellow color, contained uroxanthin, and that this uroxanthin, under the oxydising influence of nitric acid, yielded uroglauclin and urrhodin in the same manner that it had spontaneously done in the case of the bluish-green specimen. To confirm this opinion a portion of the yellow urine was exposed for a length of time to the action of the atmosphere. The same products were slowly developed that had been rapidly produced by the nitric acid. The same red metallic film was produced, the same blue tint gradually developed, and, subsequently, the same blue sediment, yielding uroglauclin and urrhodin, while the supernatant fluid was pale.

The urine contained albumen, an extremely small quantity of urea, and not a trace of either uric or hippuric acid. Hence the acid reaction could not depend (as Liebig supposes) on those acids, and Heller believes that "the acid reaction of this urine, and indeed, in Bright's disease generally (in which uroxanthin is always present in large quantity), and most probably of normal urine (at least in part), is dependent on uroxanthin, which comports itself as an acid, being precipitable by metallic salts.

The body was examined two days after death. A small quantity of urine, amounting to hardly a drachm, was found in the bladder. It had much the same properties

as the urine removed by the catheter before death : it had the same acid reaction, the same yellow color. It deposited a copious sediment, consisting for the most part of pavement epithelium, and the characteristic cylinders; it likewise contained mucus-corpuscles and oil-globules. The urine contained uroxanthin, but not a trace of uroglauclin or urrhodin, which were, however, subsequently obtained, both by nitric acid and by exposure to the atmosphere.

f. A man under the care of Dr. Seibert. The disease was of considerable standing, and had assumed a chronic form. There was much œdema of the feet, extending to the body, and the secretion of urine was diminished. The urine was of a pale wine-yellow color, turbid, and threw down a slight deposit consisting of pavement epithelium, cylinders, mucus-corpuscles, and crystals of ammoniaco-magnesian phosphate.

The urine was faintly alkaline and rapidly developed ammonia; its specific gravity was 1014. Nitric and hydrochloric acids communicated a reddish violet tint to the urine. After a time albumen with a violet tint was precipitated; hence the urine contained uroxanthin.

In 1000 parts there were contained :

Water	969.25
Solid constituents	30.75
Urea	2.50
Uric acid	0.60
Albumen	6.25
Extractive matters, uroxanthin, and carbonate of ammonia	17.70
Fixed salts	3.50

The fixed salts consisted for the most part of phosphate of soda; they contained mere traces of chloride of sodium, and a very small amount of earthy phosphates and sulphates.

g. This is a case noticed in pp. 265, 266, where an analysis of the blood is given.

The urine, on the day on which venesection was performed, was tolerably copious, but had been scanty for some days previously. It was of a faint clay-yellow color, and threw down a flocculent precipitate consisting of pavement epithelium, very long cylinders, mucus and pus-corpuscles for the most part containing two distinct nuclei, albuminous fungi, a few fat-globules and blood-corpuscles, and a very few minute crystals of uric acid. The reaction of the urine was strongly acid, and its specific gravity 1017. After the removal of the albumen the specific gravity fell to 1013; there was consequently a considerable quantity of albumen present, and with it a proportionate amount of uroxanthin.

The urea was much diminished.

The uric acid was increased, which is always the case in the early stages, and as long as the disease retains the acute form.

The phosphate of soda and sulphates were apparently unaffected; there were mere traces of the earthy phosphates, and the chloride of sodium was almost entirely absent.

The urine likewise contained hæmatin in solution, which communicated a brown tint to the fluid, and especially to the albumen on drying.

On the following day the urine and its sediment presented similar characters. The sp. gr. was 1012, and after the removal of the albumen 1010.

In 1000 parts there were contained :

Water	973.74
Solid constituents	26.26
Urea	6.48
Uric acid	0.70
Albumen	6.03
Fixed salts	5.05
Extractive and coloring matter.	8.00

j. A man aged 20 years, who had been for a long time under the care of Dr. Bitter. The disease had assumed the chronic form, and there was great general œdema.

The urine was turbid, of a very pale yellow color, and deposited a trifling sediment, composed for the most part of albuminous fungi, cylinders, and pavement epithelium with a few mucus-corpuscles.

The urine was faintly acid, but in the course of thirty-six hours became alkaline. The sp. gr. was 1009. It did not contain much albumen, and only a very little uroxanthin. In 1000 parts there were contained :

Water . . . . .	978.5
Solid constituents . . . . .	21.5
Urea . . . . .	2.5
Uric acid . . . . .	traces
Albumen . . . . .	4.6
Extractive and coloring matters . . . . .	9.4
Fixed salts . . . . .	5.0

On a farther examination of the salts it was found that the chloride of sodium was extremely diminished.

The urine was examined on two separate occasions, some days later, in relation to the solid constituents generally, and the albumen. There were found :

	1.	2.
Water . . . . .	978.6	978.2
Solid constituents . . . . .	21.4	21.7
Albumen . . . . .	4.5	4.5

Hence in these respects it had remained constant.

Some weeks later, and very shortly before the patient's death, the urine was again examined. It was red, containing blood, had a putrid odor, and deposited a sediment which in addition to the ordinary constituents contained numerous blood- and mucus-corpuscles, undoubted pus-globules, and a little uric acid. The reaction was acid, and the sp. gr. 1010. A considerable amount of uroxanthin was present.

In 1000 parts there were contained :

Water . . . . .	976.23
Solid constituents . . . . .	23.77
Urea . . . . .	1.76
Uric acid . . . . .	0.24
Albumen with a little hæmatoglobulin . . . . .	8.75
Extractive and coloring matters . . . . .	8.54
Fixed salts . . . . .	4.48

The chloride of sodium was much diminished.

Hence we see that blood occurs in the urine not only in the early stages but likewise towards the close of the disease. In the former case it arises from congestion, in the latter it is a consequence of incipient dissolution.

i. A woman aged 40 years, with much œdema, under the care of Dr. Sterz.

The urine in this case was very remarkable for its extremely high sp. gr. dependent on an enormous amount of albumen.\* The secretion was very much diminished. The urine was of a clay-yellow color, turbid, and formed a tolerably abundant sediment, containing numerous cylinders and mucus-corpuscles, together with urate of ammonia. There were also a few granular cells (Gluge's inflammatory globules), and numerous albuminous fungi.

The reaction of the urine was acid. Nitric acid caused a dense coagulation of albumen, which rapidly assumed a violet tint; hence a tolerably large amount of uroxanthin was likewise present.

In 1000 parts there were contained :

Water . . . . .	860
Solid constituents . . . . .	140
Albumen . . . . .	57

The urine retained these characters for a considerable time, always holding hæmatia in solution. It subsequently became less dense, as the disease assumed a chronic character.

\* The specific gravity was 1047, and 1000 parts of urine contained 57 of albumen.

k. A girl aged 10 years: œdema general and well-marked. The urine was very pale, of a dirty clay-yellow color; a little fluid fat separated on the surface. There was a very slight deposit of epithelium and albuminous fungi. Reaction faintly acid; sp. gr. 1005. A small quantity of albumen was present, which, on being precipitated by nitric acid, rapidly assumed a violet tint; on the addition of hydrochloric acid the urine was rendered turbid, and likewise became of a violet color, a relatively increased quantity of uric acid being thus separated, and the crystals being of a beautiful deep blue tint. Hence, notwithstanding the low sp. gr., the urine contained a large amount of uroxanthin. Of urea there were only traces, and the salts were diminished to an extreme degree; the phosphate of soda, the principal ingredient, being far below the average; the sulphates and chloride of sodium very trifling, and a mere trace of earthy phosphates. The subsequent dissection confirmed the accuracy of the diagnosis.

l. An aged man, under the care of Dr. Folwaczny. The urine was extremely turbid, of a dark clay color, and formed a sediment, without itself becoming clear. The sediment was composed of albuminous fungi, numerous cylinders, pavement epithelium, and urate of ammonia. It was upon the presence of the latter that the turbidity was dependent, for on the application of a gentle warmth the fluid became clear. The reaction was strongly acid, and the sp. gr. 1029. After the removal of the albumen the sp. gr. was only 1017. Hence a large quantity of albumen was present. On the addition of nitric acid the albumen, with a deep violet tint, was precipitated; consequently there was much uroxanthin in the urine. The urea was far below the average; the uric acid and urate of ammonia were abundant. The salts collectively were much diminished, but most especially the chloride of sodium.

The subsequent dissection proved the accuracy of the diagnosis.

28. *Urine in Typhus*.—Schönlein's opinion that the urine in the regular course of typhus is at first dark and very acid, subsequently neutral and even alkaline, and finally again becomes acid at the commencement of convalescence, has received further confirmation from the following observations quoted by Simon in his "Beiträge."

In one case the urine became faintly alkaline on the seventh day after admission; it remained either alkaline or neutral for seven or eight days; and then became faintly acid and gradually clearer, as soon as the patient exhibited symptoms of convalescence.

In a second (very severe) case the urine remained acid till the twenty-first day; it then became neutral, and afterwards alkaline, for the space of ten or eleven days, when it returned to its normal reaction.

In two other cases the urine became alkaline previously to the fourteenth day of the disease; in one of them the secretion was so thoroughly saturated with carbonate of ammonia, and evolved so disgusting an odor, as to be perceptible over the whole ward. This urine deposited a considerable sediment of pus or mucus, mixed with the phosphates of lime and magnesia, and effervesced briskly on the addition of an acid. In one of these cases the urine remained alkaline for fourteen, and in the other, for twenty-one days, before it resumed its acid reaction. Both cases recovered.

It is worthy of notice, that a deposition of urate of ammonia not unfrequently precedes the occurrence of alkalinity and the appearance of the earthy phosphates, which, as Schönlein remarks, may be regarded as the precursors of a favorable change.

During the mild form of typhus recently (1843) prevalent in Berlin, he noticed these changes in several cases, and in fact, when from being alkaline the urine again became acid, and at the same time clear and abundant, there was scarcely any risk in giving a favorable prognosis.

29. *Urine in Scorbutus*.—The urine in this disease has been analysed by Heller and Martin.

The two following cases are recorded by Heller:\*

a. A girl aged 19 years, marked over the whole body, was admitted into the clinical ward of Professor Lippich.

The urine was of an intensely yellowish-brown color, rather turbid, and deposited flocks of mucus. The odor, at first ordinary, rapidly became ammoniacal; and the same tendency was observed throughout the course of the disease. Reaction faintly acid. Sp. gr. 1021. The urine contained in 1000 parts:

\* Archiv für phy. und pathol. Chemie, vol. 1, p. 12.

In one of the cases recorded by Mr. Solly,\* there was found in the urine between three and four times the amount of phosphate of lime that occurs in the healthy secretion.

32. *Urine in Dropsy*.—Heller† analysed the urine of a woman aged 40, suffering from ascites. The secretion was tolerably copious, of a light yellow color, and turbid, from containing a large quantity of mucus. It was neutral, but speedily became alkaline. Its specific gravity was 1007, and it contained in 1000 parts :

Water . . . . .	978.40
Solid constituents . . . . .	21.60
Urea . . . . .	8.40
Uric acid . . . . .	mere traces.
Extractive matter and traces of albumen . . . . .	7.11
Fixed salts, chiefly chloride of sodium . . . . .	6.00

33. *Urine in Syphilis*.—Heller examined the urine of a man, aged 38, who was taking iodide of potassium for a syphilitic eruption, accompanied with pains in the bones. When the urine was first examined, he was taking two scruples daily in three ounces of distilled water; on the second occasion (four days afterwards), he was taking additionally half a grain of iodine.

	1.	2.
Specific gravity . . . . .	1015	1021
Water . . . . .	974.800	954.40
Solid constituents . . . . .	25.200	45.60
Urea . . . . .	7.736	13.82
Uric acid . . . . .	0.310	0.51
Extractive matters and hydrochlorate of ammonia . . . . .	6.433	12.15
Fixed salts, including iodide of potassium . . . . .	10.520	19.32

The urine, on the first occasion, was excreted in about the normal quantity, was of a dark-yellow color, and had an acid reaction; on the second occasion, it was of an intensely dark-yellow color, and its reaction was faintly alkaline; its amount was also diminished. No albumen or biliphæin was present in either case.

After the continuance of the second prescription for eight days, the urine of twenty-four hours was collected with the view of ascertaining the amount of iodine removed by the kidneys. The whole daily urine amounted to 850 grammes, or 24.5 ounces.

In order to estimate the amount of iodine, 200 grammes of urine were evaporated, the residue dissolved in water, and ammonia added to the filtered solution till it exhibited a strongly alkaline reaction. On the addition of nitrate of silver, a precipitate was thrown down, which was washed with a weak solution of ammonia, dried, and weighed.

From the 200 grammes of urine, 0.94 of iodide of silver were obtained, containing 0.507 of iodine; hence, 1000 parts of urine contained 2.535 of iodine, corresponding to 3.322 of iodide of potassium. Consequently, in the whole daily amount of urine, there were contained 2.824 grammes, or 38.689 grains of the iodide. Now, the forty grains of iodide of potassium and half a grain of iodine may be regarded as equivalent to 40.626 grains of the iodide alone (for iodine is always in a state of combination when it occurs in the secretions), and, consequently, the whole of the iodide was removed by the kidneys, with the exception of nearly two grains, which were distributed partly to the saliva, sweat, nasal mucus, &c., and partly remained in the blood.

34. *Urostealith in Urine*.—Heller‡ has recently announced the discovery of a new constituent of urinary calculi, to which he has given the name *urostealith*. It is soluble in carbonate of soda; and when that remedy is administered, *urostealith*, in a state of solution, is found in the urine.

The patient was a man of tolerably good constitution, aged 24 years; he complained of pain in the region of the right kidney, and difficulty in micturition, occasionally passing small elastic soft concretions. These were examined by Heller, and found to be perfectly soluble in alkalies, with which they formed a soap.

\* Transactions of the Medico-Chirurg. Society, p. 448, 1844.

† Archiv für phys. and pathol. Chemie, vol. i., p. 47.

‡ Archiv für phys. and pathol. Chemie, vol. ii., p. 1.

35. *Analysis of the Urine before the administration of Carbonate of Soda.*—25th Feb. The urine had a light yellow, whey-like appearance, no odor, and deposited a sediment of ammoniaco-magnesian phosphate. Fat-globules were detected under the microscope. The reaction was neutral; the specific gravity 1017.5. It contained, in 1000 parts:

Water . . . . .	965.800	
Solid constituents . . . . .	34.200	
Urea . . . . .	12.631	
Fat . . . . .	0.320	
Extractive matters with much hydro- chlorate of ammonia . . . . .	8.569	
Fixed salts . . . . .	12.680	
consisting of		
Earthy phosphates . . . . .	2.040	} 12.680
Chloride of sodium . . . . .	0.163	
Sulphate of potash . . . . .	2.296	
Basic phosphate of soda and peroxide of iron . . . . .	8.181	

Moreover, every 1000 parts of urine threw down 0.62 of pure ammoniaco-magnesian phosphate. Not a trace of uric acid could be detected.

28th Feb. The day after the carbonate of soda had been given, the urine was neutral, of a pale yellow color, and had a specific gravity of 1006. Fragments of urostealith were detected in the sediment, mixed with ammoniaco-magnesian phosphate. No uric acid was present.

By the 2d of March, the calculus of urostealith was almost entirely dissolved. The reaction of the urine was neutral; the addition of ammonia produced a reddish-brown tint (this is regarded by Hüller as a test for urostealith); uric acid was still absent. The specific gravity was 1020. The urine contained, in 1000 parts:—

Water . . . . .	959.90
Solid constituents . . . . .	40.10
Urea . . . . .	11.20
Fat and urostealith . . . . .	3.40
Extractive matters and hydrochlorate of ammonia . . . . .	8.29
Fixed salts . . . . .	17.21

No sediment was deposited. In order to obtain the urostealith, a large quantity of urine was evaporated, and sulphuric acid added in order to decompose the soap. The urostealith was taken up by boiling ether, which, on evaporation, yielded a violet tint.

36. *Urine of Peculiar Color.*—Dr. V. Velsen\* has published the case of a man, aged 84 years, with chronic cystitis, who passed very fetid urine of a deep violet color, after the use of lime-water mixed with warm milk. After the omission of the draught for a few days, the peculiar color disappeared.

37. *Urine during Pregnancy.*—The following observations on kystein, made by the late Dr. Simon, of Berlin, and published in his "Beiträge," &c., are well worthy of attention:—

"Since Nauche's announcement (a few years ago) of the discovery of a peculiar substance to which he gave the name of *kystein*, in the urine of pregnant women, the renal secretion during this state has been carefully examined by numerous chemists.

"Nauche describes kystein as a white mass that, after the urine has stood for some time, separates, partly rising to the surface, where it forms a somewhat tough pilous membrane interspersed with glistening crystals, and partly sinks to the bottom, forming a creamy precipitate. Nauche regards kystein as an indubitable sign of pregnancy. It is also considered a certain test by Eguiser; he states that it appears after the urine has stood two to six days, depositing itself as a white opaque body, and then rising to the surface and producing a film like the solid fat that settles on cold broth. From an extensive series of observations, Dr. Kane concludes that kystein does not appear sooner than 30 hours, or later than 8 days after conception; that on its first appearance it forms a scarcely perceptible membrane, which gradually becomes firmer and thicker, and after a time, breaks up, the fragments sinking to the bottom;

\* Casper's Wochenschrift, 1844, No. 18.



that a kystein-like membrane may also appear in the urine of persons with phthisis, arthritis, metastatic abscesses, vesical catarrh, &c., but that it differs from true kystein, both in the manner of its formation and of its destruction; appears later than the true kystein, but having once appeared, develops itself more rapidly and possesses less tenacity. The urine is neutral or ammoniacal on the appearance of the kystein, which, under the microscope, appears as an amorphous matter consisting of minute opaque corpuscles, intermingled with crystals of ammoniaco-magnesian phosphate. Dr. Kane convinced himself that the occurrence of kystein was independent of the presence of albumen; he likewise ascertained that it occurs not only during pregnancy, but also during the period of lactation, especially when the secretion of milk is at all checked. He concludes with the observation that "when pregnancy is possible, the exhibition of a clearly-defined kystein-pellicle is one of the least equivocal proofs of that condition, and that when, in a case of suspected pregnancy, this pellicle is not found, if the female be healthy, the probabilities are as twenty to one that the prognosis is incorrect."\* It appears from a review of Kane's cases, that the kystein most commonly appears on the third day; in one case, however, it could not be observed till the eighth day after the urine had been passed; and in some cases it appeared during the first twenty-four hours.

"During the first weeks of pregnancy, Kane only rarely observed it; it was most commonly noticed during the seventh, eighth, and ninth months, and up to the period of delivery. In eighty-five cases of pregnancy it was absent eleven times, and was present in thirty-two out of ninety-four cases examined during lactation.

"I have examined the urine during the second, third, fourth, fifth, and sixth months of pregnancy, but have not invariably detected kystein. In the cases in which it was formed, as in the second, fifth, and sixth months of pregnancy, the urine on emission was clear, yellow, faintly acid, and not affected either by nitric or acetic acid, or by heat. Usually, in about twenty-four hours, the whole urine became slightly turbid, the acid reaction disappeared, a white viscid sediment was deposited, and soon afterwards the surface of the fluid became covered with a pellicle at first extremely delicate, but after from twelve to twenty-four hours becoming tough, thick, opaque, and with a glistening appearance in consequence of the light reflected from numerous minute crystals of ammoniaco-magnesian phosphate with which it was studded. On examining this pellicle in its early state under the microscope, it appeared (when magnified three hundred times) to consist of an amorphous matter composed of minute, opaque points, such as are presented by sediments of phosphate of lime or urate of ammonia, except that in the latter the individual particles are usually darker, more clearly defined, and larger than in kystein. The whole field of vision was likewise bestrewn with numerous vibriones in active motion, and crystals of ammoniaco-magnesian phosphate. When the pellicle became thicker, precisely similar phenomena were observed, but the vibriones were supplanted by a considerable number of monads; on the addition of acetic acid the crystals disappeared, while the amorphous matter remained unaffected. On digesting the pellicle in acetic acid, and adding ferrocyanide of potassium to the filtered solution, a comparatively slight turbidity ensued, but on macerating the pellicle in a dilute solution of potash, acidulating the filtered solution with acetic acid, heating, and adding ferrocyanide of potassium after a second filtration, a more decided turbidity was observed. From these experiments I concluded that a protein-compound was present. The white sediment, that occurred after the urine had stood for some days, possessed a disagreeable, pungent, caseous odor; under the microscope it presented the same appearance as the pellicle. After repeatedly washing a portion of the sediment with water, and then heating it with alcohol and a little sulphuric acid, it developed a disagreeable fruit-like odor; reminding me of butyric ether. [We shall presently show that the accuracy of this observation has been thoroughly established by Lehmann.] It results from the above observations, that kystein is not a new and distinct substance, but a protein compound, whose formation is undoubtedly and closely connected with the lactal secretion. From the observations of Kane and myself, it seems to follow that pregnancy may exist without the occurrence of kystein in the urine; if, however, there is a probability or possibility of pregnancy, and kystein is found in the urine, then the probability is

\* American Journal Med. Science, July, 1862.

reduced almost to a certainty. We are unable to draw any positive inferences respecting the stage of pregnancy from the appearance of the kystein.

"A deposit of caseous matter and earthy phosphates was frequently observed by Golding Bird in the advanced stages of pregnancy. This sediment is probably similar to Nauche's kystein.

"Every urine left to itself forms a pellicle, more or less resembling that of kystein. If formed soon after the urine is discharged, it consists of earthy phosphates, which, from the urine being alkaline, are for the most part precipitated, but likewise form a delicate film on the surface. When this is the case, the pellicle is very thin and readily sinks to the bottom. Under the microscope crystals of ammoniaco-magnesian phosphate, and an amorphous matter very similar to kystein, but consisting of phosphate of lime, are observed: this likewise differs from kystein in being soluble in free acids. A pellicle of fat on the surface of urine may sometimes be mistaken for kystein; films of this nature are very thin and usually iridescent, and under the microscope reveal the presence of numerous fat-globules.

"The membrane formed on the surface of urine six or eight days after emission, usually consists of a species of mould; under the microscope there may be seen innumerable filaments matted together, and interspersed with sporules.

"I once observed a pellicle on the surface of a man's urine three days after emission, which both in chemical and microscopical characters presented the closest analogy to kystein."

Lehmann† frequently examined the urine of a pregnant woman from the second to the seventh month. It was of a dirty yellow color, and more inclined to froth than usual; it generally became turbid in from two to six hours; but the morning urine, after standing for thirty-six or forty-eight hours, was always covered with a greyish-white film, which often, in two or three days, sank and mixed with the sediment that formed when the turbidity appeared, but sometimes was a longer period before it broke up. By means of ether, he could always remove from this film a considerable quantity of viscid fat, which formed a soap with potash, and then, on the addition of sulphuric acid, developed a well-marked odor of butyric acid. On treating a large quantity of this urine with sulphuric acid, and distilling, he obtained, after treating the distillate with baryta water, brilliant crystals of butyrate of baryta. The substance taken up by ether, when greatly evaporated with nitric acid, and exposed to the vapor of ammonia, was not in the least reddened; with concentrated hydrochloric acid, on the other hand, it assumed a blue tint; dissolved in potash, boiled, and treated with hydrochloric acid, it developed sulphuretted hydrogen; it dissolved tolerably freely in acetic acid, from which it was precipitated by ferrocyanide of potassium. These reactions left no doubt of its being a protein-compound. The portion of the film insoluble in potash, consisted chiefly of phosphate of magnesia (ammoniaco-magnesian phosphate?) with a little phosphate of lime. Hence Lehmann concludes that the kystein of Nauche is not a new and distinct substance, but a mixture of butyraceous fat, phosphate of magnesia, and a protein-compound very similar to casein. He likewise mentions that, in examining the urine of a woman who was not suckling, and was kept on very low and sparing diet, on the third, fourth, sixth, and ninth days after delivery, he found a large quantity of butyric acid taken up by ether from the solid residue; and on dissolving the ethereal extract in water, adding sulphuric acid, and distilling, he obtained a further quantity. The urine in this case was always rather turbid, of a dirty yellow color, very acid, and contained a very small amount of uric acid.

Moller‡ relates two cases in which the urine of women, who were not pregnant, was covered with a film exactly resembling kystein; in one case there was considerable hypertrophy of the uterus; in the other, no affection of the generative organs could be detected. The film of kystein consists, according to his observations, of fat, earthy phosphates, and a caseous matter, which differs, however, from the casein of milk in being held in solution by a free acid. When the urine becomes neutral or alkaline, the caseous matter ceases to be held in solution, and separates as kystein. Everything checking the decomposition of the urine hinders the formation of the pellicle, and if the recent secretion is treated with a free acid (mineral or organic) no separation of

\* [A similar appearance has been observed by Prout in the urine of a delicate child, fed chiefly on milk (On Stomach and Renal Diseases, 4th edit., p. 555, note.)

† *Lehrbuch der Physiologischen Chemie*, vol. I., p. 252.

‡ *Casper's Wochenschr.*, Jan. 11-18, 1845.

kystein takes place, even if ammonia be added to saturation, or decomposition allowed to proceed to any extent.

In a case of decided pregnancy, no kystein was formed during the period of a severe cold, attended with a copious deposition of urates; but when the urine became natural, the kystein reappeared. He twice detected cholesterin in kystein.

Kleybolte\* has examined the urine in ten cases of pregnancy, and invariably found kystein on the fifth day. The morning secretion was used, and, after being slightly covered to protect it from dust, was allowed to stand, at ordinary temperature, for ten days. The following appearances were observed in the tenth week of pregnancy: urine, peculiarly yellow, with a greenish tint. Second day, mucous sediment; third day, no change; fourth day, turbidity ascending from the bottom; fifth day, white points and leaflets on the surface, turbidity ascending from all parts of the bottom, and the sediment almost gone; sixth day, kystein distinctly observed on the surface, like lumps of fat on the surface of cold broth; seventh day, no change. From the eighth to the tenth day, the kystein disappears, the turbidity again descends, and the sediment noticed on the second day is reproduced. The nine remaining cases are in most respects similar to the above.

A few observations on kystein have been recently published by Audouard,† but contain nothing of importance, except that in six specimens of urine, passed by young women suffering from amenorrhœa, he found kystein in five.‡

38. *Urinary Deposits.*—The following observations, by Heintz, are deserving of an attentive perusal. He observes that uric acid deposits separate in two forms, one of which appears in distinct crystals, the other subsides from the urine, as a very fine amorphous powder, which is dissolved by boiling, but again deposited on cooling, and is usually of a reddish, more rarely a white color. Although the latter deposit has been much examined, we are still in considerable doubt as to its nature; the usually received view is, either that it consists of uric acid and ammonia, and contains, in addition, a small quantity of a coloring matter, or that it is amorphous uric acid. Since uric acid, according to Liebig, is soluble in phosphate of soda, it might equally be supposed that a portion of the uric acid would be deposited on cooling, as that the acid phosphate of soda formed should remain in solution, whilst acid urate of soda was deposited. The decision of this question is rendered much more difficult, by the ordinarily small quantity of the deposit which is formed; on washing this, the greater part is redissolved; and finally, it cannot be freed from the adhering coloring matter without great difficulty, if at all. In its examination, the author proceeds as follows:

"The fresh urine was immediately filtered, or, when the deposit had already formed, was warmed and filtered hot. The reddish-colored powder, which subsided on cooling, was filtered and washed until the liquid which passed through ceased to contain any urinary ingredients. The powder thus obtained was treated with potash, in a watch-glass, whilst still moist. A glass rod, moistened with muriatic acid, and held over it, gave distinct clouds of muriate of ammonia in every case, so that the presence of ammonia in these deposits may be regarded as proved. Another portion of the sediment was incinerated. The amount of ash was rather variable, amounting to from 2.98 to 8.02 per cent. This was exhausted with a small quantity of boiling water, and the alkaline solution filtered and evaporated to dryness. The residue was heated with a few drops of water, then warmed, and a few drops of muriatic acid added. The author constantly observed an effervescence, although slight;—a proof that the dissolved bases before the combustion of the substances were combined with organic acids. In the residue of the evaporated liquid, soda was distinctly detected by the blowpipe; potash was undoubtedly detected twice by chloride of platinum, although in very small quantity.

"The portion of the ash insoluble in water was treated with muriatic acid, in which it dissolved with effervescence, the solution was rendered ammoniacal, and a solution of oxalic acid added to the liquid which had remained clear: this constantly caused a precipitate of oxalate of lime. The liquor filtered from this yielded in one case with phosphate of soda a slight precipitate of ammonio-phosphate of magnesia. Neither muriatic, sulphuric, nor phosphoric acid was ever detected in the ash.

"From these experiments it is evident that the above sediment constantly contains the bases ammonia, soda and lime, sometimes also potash and magnesia; these are

\* Casper's Wochenschrift, April 26, 1845.

† Journal de Chimie Méd., May, 1845.

‡ Many other communications have recently been published on this subject, which I do not deem necessary to notice, as they are, for the most part, simply confirmatory of the above observations.

combined with an organic acid, which is evidently the uric. The organic acid could not be the lactic, because this forms more soluble salts. The quantity of the red coloring matter, even supposing it to be an acid, would not be sufficient to saturate such an amount of base; moreover, the author found the largest quantity of ash (8.02 per cent.) in a deposit which was quite white. The next question is, whether in this deposit the whole of the uric acid is combined with bases, or is partly free. This question cannot be decided by a simple analysis, because we cannot completely free the deposit from the coloring matter.

"Becquerel, who with Quevenne considers this urinary deposit as amorphous uric acid, gives the following reasons for so doing:—When the sediment is separated by filtration from the urine, washed several times with water, and finally with alcohol, and treated on an object-glass with muriatic acid, its form is not in the least altered, whilst if it were a urate, uric acid should be separated in crystals. Becquerel has observed this to occur several times, but only partially, and then he says it was mixed with urate of ammonia.

"The author, however, found that when dried urate of ammonia, which was crystallized in fine needles, was treated under the microscope with dilute muriatic acid, at first no change could be perceived; gradually the needles became somewhat broader, without, however, the uric acid which separated assuming the ordinary form which it exhibited when it subsided immediately from the liquid. If muriatic acid diluted with alcohol be used instead of that diluted with water, the acid acts still more slowly; the uric acid, however, then subsides in the amorphous form. The sediment from the urine behaves in the same manner, as also the artificially prepared amorphous salt of urate of soda and ammonia. Consequently we can place no value on Becquerel's statement, that this sediment is composed of amorphous uric acid.

"The author could not succeed in proving with certainty that the amorphous deposit does not contain any free uric acid as well as urates, but this may be supposed with great probability.

"When a urine in which an amorphous deposit has formed is filtered, and a little pure uric acid added to the liquid, which is then warmed, a considerable quantity of it is dissolved, and subsides on cooling in the form of amorphous urate of ammonia.

"The question then is, how can it be explained, that when urine is repeatedly boiled with uric acid, some of it is each time dissolved, and on cooling a urate is deposited? If we suppose that the artificial deposit, which has subsided after the first ebullition of the urine with uric acid, has converted the phosphate of soda contained in it almost completely into acid phosphate, this cannot certainly as such yield any amount more of its base to uric acid. But as the urine contains urea, which yields ammonia on its decomposition, either at the ordinary temperature or by ebullition, phosphate of soda and ammonia must be formed, which is now capable of again dissolving uric acid. If there were not in the urine a constant source of the formation of this base, the above experiment would be of considerable importance in the decision of this question.

"We know that when uric acid is precipitated from a solution of its salts by means of an acid, we constantly obtain crystalline uric acid, however quickly the precipitation occurs. Now, since the deposit from the urine subsides but slowly, we cannot see why the uric acid is here precipitated in an amorphous form. It might be urged, that the urinary coloring matter prevented the crystallization; but we very frequently find crystalline uric acid, which is likewise colored by the coloring matter, and forms a sediment in the urine. Nay, even in the amorphous sediment we frequently find a few crystals of uric acid. Finally, when the uric acid is separated from the urine, or, in favorable circumstances, by an acid from the deposit, it falls in a crystalline state, and is colored.

"Although it has been sufficiently proved, by what we have stated, that the uric does not separate in the amorphous form, we have to inquire why the urate of ammonia, which can likewise be obtained in the crystalline state, does so. As regards the urate of lime, this subsides in a state of purity from water in this form. Dr. Bence Jones has advanced an explanation of this point, which is confirmed for the most part by the experiments of the author. Thus he found that when urate of ammonia is dissolved in water, and treated with a solution of other salts, as acetate or muriate of ammonia, it subsides in an amorphous form. It likewise separates from chloride of

sodium in an amorphous form, but is dissolved in larger quantity by it than by the former saline solutions. Bence Jones considers the salt which separates from solution of chloride of sodium as urate of ammonia. The author, however, found both soda and ammonia in it, and hence at first supposed that the uric acid had formed a double salt of soda and ammonia, a corresponding amount of muriate of ammonia being produced.

"To examine this salt more accurately, the author added sulphuric acid to it, heated it to redness, and estimated the residue as sulphate of soda. But the quantity of soda obtained from it varied in five specimens from 12.73 to 14.79 per cent. A salt, which was obtained in the form of fine needles, by boiling an ammoniacal solution of common salt with uric acid, and allowing the filtered liquid to cool, yielded only 4.79 per cent. of soda.

"To ascertain the true composition of this compound, the author adopted the following method:—A weighed quantity of salt, which had been dried at 212°, was treated with hot dilute muriatic acid, and the solution evaporated at a moderate heat to a small bulk. After it had cooled, about five times its volume of absolute alcohol was added, so as to produce a liquid in which uric acid is completely insoluble, whilst chloride of sodium and ammonium are dissolved by it. The uric acid was filtered, washed with alcohol, dried at 212°, and weighed.

"The muriate of ammonia was precipitated from the filtered solution by chloride of platinum, the liquid filtered, evaporated, and heated to low redness, to separate the platinum. The heated mass was then treated with water, the solution evaporated, and the residue heated to redness and weighed. Moreover, the author controlled these analyses by ascertaining the increase in weight of the salt evaporated with the water acidulated with muriatic acid, and by a nitrogen analysis. No ammonia was evolved on drying at 212°. The analyses yielded:

	1.	2.	3.	4.		
Uric acid	81.20	81.82	81.75	81.81	2	80.73
Ammonia	0.09	0.95	0.60	1.41	}	14.96
Soda	14.92	14.27	14.41	12.64		
Water	3.79	2.96	3.24	4.14	1	4.31

The above-mentioned salt, which crystallized in needles, and had yielded 4.81 per cent. of soda, consisted of—

Uric acid	.	.	.	.	.	88.35
Ammonia	.	.	.	.	.	6.31
Soda	.	.	.	.	.	4.74
Water	.	.	.	.	.	0.60

Consequently, this composition cannot be expressed by a simple formula, since it contains much more uric acid than the quantity of bases obtained is sufficient to combine with. It must, however, be remarked, that almost all the water escapes from this salt at 212°, whilst, in the above-mentioned compound, one atom remains. There is, however, no doubt, from the analysis of this salt, that its composition is different from that of the above-mentioned soda-salt. Should it be required, therefore, to prepare the amorphous salt again, uric acid must not be treated with an ammoniacal solution of chloride of sodium, but urate of ammonia, with the saline solution. The stronger the solution of chloride of sodium used, the more soda is contained in the compound which separates. The author also succeeded in procuring this compound by digesting a solution of common salt, which had been triturated with finely-powdered uric acid, for several days in the cold, with dilute solution of ammonia. The whole of the uric acid is thus converted into an amorphous powder, and when the amount of liquid is increased, contains the uric acid, soda, ammonia, and water in somewhat larger globules. This constantly happens in the urine; consequently both salts must separate from it in the above forms.

"The salt obtained by digestion in the cold contained—

	1.	2.
Uric acid	81.43	80.73
Ammonia	0.36	
Soda	13.79	14.96
Water	4.43	4.31

Golding Bird dissolved phosphate of soda in water, added uric acid to the solution, and dissolved it in it by the application of heat. After filtering, a salt separated on cooling, consisting of prisms united into stellæ and bundles, which were not soluble in boiling water, and left a residue on incineration. The author's experiments yielded the same results; the crystals were not altered in form by muriatic acid, but became slightly opaque; some of them disappeared without any crystals of chloride being formed. His results, on analysing the ash of this compound, were entirely different. According to Golding Bird, the residue obtained by digesting the crystals with muriatic acid and incinerating in a platinum spoon, consisted of phosphate of soda. The author, however, on incineration of the pure, well-washed salt, obtained a white, fused residue, which dissolved in water, effervesced with acids, and, at the same time, evolved the odor which is set free when a cyanate is treated with an acid. It contained no phosphoric acid; consequently, the salt was not a compound of uric acid with phosphate of soda, as Golding Bird supposes, but a soda salt of this acid.

"When the author heated the liquid filtered from the above compound several times with uric acid, and filtered it whilst hot, a slight deposit subsided, which, when washed and incinerated, likewise left an ash containing soda, but in small quantity. When this was repeated with the liquid, which had been again filtered, tolerably pure uric acid was at last obtained, which left barely a trace of a fixed salt when incinerated. The form of the crystals was most similar to that in which uric acid usually occurs in the urine.

"The phosphate of soda and ammonia acts in the same way as the phosphate of soda, as stated by Golding Bird, except that the deposit first formed consists of urate of ammonia, with but little urate of soda. Finally, however, almost pure uric acid subsides. Hence, phosphate of soda and of soda and ammonia are partly decomposed by uric acid, so that, on cooling, the base remains in combination with the uric acid, which separates; but when a certain amount of the base has separated from the solution, on the application of heat the uric acid dissolves, and, on cooling, again subsides as free uric acid; consequently, a deposit of pure crystallized uric acid must occur in the urine when it contains very acid phosphates, of course supposing that sufficient of the acid exists in the urine. In fact, the urine is always very strongly acid when it contains a deposit of crystallized uric acid. The less acid the phosphate dissolved in it, so much the more base will the uric acid which subsides contain; until, at last, the deposit, continuing to crystallize when the proportion is two equiv. of base to one phosphoric acid, contains the largest quantity of base.

"Since urine, as we have stated above, which has deposited the amorphous sediment, when warmed with uric acid and then filtered, can deposit a similar sediment, which contains considerable amounts of fixed bases, it is evident that the amorphous deposit must be formed in the urine when more than two equiv. of base are combined in it with one equiv. of phosphoric acid. In fact, an experiment showed that when a solution of phosphate of soda was boiled for some time with urate of ammonia, and the liquid, which was then neutral or slightly alkaline, was filtered, after some time a deposit was formed, which was completely amorphous; it, however, adhered to the bottom of the vessel, and appeared, under the microscope, as consisting of tolerably large globules. This salt evidently corresponds to the amorphous urinary sediment which we often find in urine, particularly when ammoniacal. Another mode of formation of this salt may still be given. Thus, if crystals of uric acid have subsided from an acid urine, and if this urine speedily becomes alkaline from the rapid decomposition of the urea, the crystals are gradually formed in the above globules. They may also be artificially produced, by rendering the urine, in which crystals of uric acid have been deposited, slightly ammoniacal.

"It has been stated above, that when pure uric acid is treated with solution of chloride of sodium and a little ammonia, an amorphous salt, in smaller or larger globules, is formed, which has exactly the same composition as that which is formed when urate of ammonia is dissolved in a similar solution of chloride of sodium. Hence, it appears that the amorphous deposit occurring in the urine, which likewise forms large globules, consists of an admixture of urate of ammonia and urate of soda. The author endeavored to purify the deposit which occurs in the urine, by adding to it a small quantity of acid (by which it is not dissolved except after a considerable time, whilst the phosphates mixed with it are immediately dissolved); and then, after the deposit has subsided, pouring off the clear fluid, and rapidly filtering and washing. In most cases, the filtration was prevented by the mucus, so that the deposit had time to dissolve com-

pletely; twice only could it be purified in this way. It contained a large quantity of ammonia, and gave on incineration 1.75 to 1.72 per cent. of ash, which contained a little phosphate of lime as well as soda. As the finely-pulverulent deposit forms in acid urine only, it appears allowable to suppose, that for this such a degree of saturation of the phosphoric acid occurring in the urine is necessary: that more than two, but less than three, atoms of base are combined with it, whereby the acid reaction can be readily explained by means of the uric acid dissolved in it. The author endeavored to procure such a fluid, by dissolving uric acid and urate of ammonia at the same time in phosphate of soda, or by adding a very small quantity of muriatic acid to the mixture of the urate of ammonia with a solution of this salt, and filtering the warm liquid. In these cases, however, large globules, mixed with uric acid, were constantly formed. When chloride of sodium was now added to the liquid, the author frequently obtained a powder exactly similar to the amorphous sediment, and which always adhered somewhat firmly to the sides of the vessel, as we frequently find in urinary deposits.

"The common occurrence of uric acid and urates in the urine is explained from the fact, that crystals and an amorphous powder frequently subside together, as in the above case. This may occur when but little more than two equivalents of base are combined with one of acid. However, urine, which at first is strongly acid, and deposits uric acid, may be so soon neutralized by the decomposition of the urea, that the amorphous deposit is formed.

"The author only obtained the amorphous precipitate with certainty when he added a drop of very dilute acid to the globular deposit; and we know many urines behave in the same manner from which no deposit spontaneously subsides. In this case the acid added, extracts a portion of the base from the phosphate of soda, so that it cannot dissolve any more uric acid; but this, if too much acid be not added, subsides in the form of urate.

"When urate of ammonia was dissolved in a solution of chloride of sodium and phosphate of soda, to which a drop of a dilute solution of chloride of calcium had been added, the filtered slightly acid liquid on cooling constantly deposited an extremely fine amorphous powder, which readily dissolved when heated, but on cooling subsided in the same form, and contained lime as well as ammonia and soda. The above-mentioned pulverulent urinary deposit has the same properties and is composed of the same ingredients; and the cause of its separation as a fine amorphous powder is sufficiently explained by this experiment. It depends upon the simultaneous precipitation of these three salts; the lime salt always separates in the form of an amorphous powder; the ammonia and soda salt do so frequently when chloride of sodium is present."

39. *Urinary Calculi*.—In one of Liebig's lectures on organic chemistry now appearing in the "Lancet," there are some excellent remarks on the formation and discrimination of urinary calculi. We present them here in a somewhat abbreviated state.

"Uric acid is always present, to a small amount, in the normal urine of man. It is partly to its presence that this fluid owes its well known acid reaction. In unhealthy conditions of the organism, the proportion of uric acid in the urine is greatly augmented, and accumulating in the bladder, it gives rise to the formation of stones, or calculi. But, in addition to uric acid, there are other matters which enter into the composition, or altogether constitute those concretions which claim our attention, and amongst these are two organic substances particularly deserving of a minute consideration, as an appendix to our exposition of the series of bodies formed from uric acid—namely, *Cystic Oxide*, and *Uric Oxide*, or *Cystine* and *Xanthine*. I shall, moreover, take the opportunity of this lecture to treat of the subject generally, and include those urinary concretions which consist of inorganic matters.

"Under the names urinary concretions, or calculi (for these terms are synonymous), are comprised all substances devoid of organization found detached in the urinary bladder. Similar concretions, indeed, are also formed in other animal fluids, as the bile and the saliva. Wherever they are produced, they may arise from very various causes.

"Most of the fluids of the animal body, but more especially those destined to be evacuated from the system, hold in solution certain compounds, which are kept dissolved only by very weak affinities, and therefore, as soon as the fluid has left the body, they become deposits in a solid form. When, therefore, these fluids are retained

longer than is ordinarily the case, or when, in consequence of unhealthy conditions of the organism, these matters, which, in the normal state, exist only in minute quantities, are produced in larger proportions, they deposit themselves in a solid form, and the process being frequently repeated, concretions are formed, and as we are now contemplating especially the case of the urine, are deposited in the bladder. In this manner those calculi are generated which consist of uric acid and the urates.

"Calculi may, however, be formed when neither the proportionate amount of solid matter in solution is increased, nor the fluid retained a longer time than natural in the bladder, because the urine may, from various causes, undergo such a change in its constitution, that those conditions essential to the solubility of certain compounds may be absent, and consequently these compounds necessarily become precipitated.

"Phosphate of lime is perfectly insoluble in pure water; its solubility in urine depends upon the existence of free acid in that fluid. If, from any cause, the urine becomes alkaline, as, for instance, when organic salts with alkaline bases are taken into the stomach, which, as is well known, are converted into carbonates during their passage through the organism, then the conditions essential to the solubility of phosphate of lime are removed and this salt is precipitated. All calculi consisting of phosphate of lime are produced in this manner.

"The calculi containing ammoniaco-magnesian phosphate are also produced in a manner precisely analogous to this. In many animal fluids, particularly the urine, phosphate of magnesia is found in solution. Normal urine contains no ammonia, but when from any cause ammonia is generated, the phosphate of magnesia no longer remains in solution, but is precipitated as ammonia-phosphate of magnesia.

"Beside the foregoing, there is another cause of the formation of urinary concretions. In diseased conditions of the system, peculiar compounds are not unfrequently formed which are never produced in the healthy organism, and being perfectly insoluble in urine, are immediately deposited in a solid form from that fluid. In this manner oxalate of lime calculi are formed, and those concretions of organic matter termed cystic oxide and xanthic oxide.

"But beyond these chemical causes of calculi, certain mechanical conditions have almost always more or less influence upon their formation in the urinary bladder. When any of these states exist, and, in consequence, deposits occur of uric acid, urates, insoluble phosphates, oxalate of lime, &c., in small quantities, it does not necessarily happen that calculi are formed, but, in most cases, the urine flowing off, carries with it through the urethra the sediments suspended in it, or already deposited. When, however, the bladder contains mucus, these sediments are apt to adhere to it, and become united into masses. Very often a foreign body, which has accidentally got into the bladder, forms the nucleus upon which these sediments are deposited, and to which they adhere; the irritation they occasion on the internal surface of the bladder induces the secretion of mucus in which the urinary deposits accumulate, and they thus become the direct cause of the formation of calculi.

"The calculi formed in the human bladder differ, therefore, in their composition; and whilst there is a great variety, the following may be taken as characteristic of most of them:

- |    |   |
|----|---|
| 1° | calculi, composed of Uric acid.                                     |
| 2  | " Urate of ammonia.   |
| 3  | " Oxalate of lime.  |
| 4  | " Phosphate of lime.  |
| 5  | " Ammonio-phosphate of magnesia.                                    |
| 6  | " A mixture of phosphate of lime and ammonio-phosphate of magnesia. |
| 7  | " Cystic oxide, or cystin.  |
| 8  | " Uric or xanthic oxide, or xanthine.                               |

40. "*Uric acid Calculi.*—The calculi which are most frequently found in the bladder are those composed chiefly of uric acid. They are generally of a reddish-brown or yellowish color; which is derived from the coloring matter of the urine. Their surface is sometimes smooth, sometimes rough; their size, of course, very variable. The fracture of these calculi sometimes presents a crystalline texture; at others, it is smooth, and often they are made up of concentric layers. They are rather hard, so that they may be just scraped with a knife. Calculi are never composed of perfectly



pure uric acid; they always contain hardened mucus, which binds the uric acid together, and small quantities of alkaline urates, urate of lime, phosphate of lime, and ammonio-phosphate of magnesia in admixture. In the inverse proportion to the prevalence of these impurities, these calculi present the characteristic properties of uric acid. The test is nitric acid, and the best way to apply it is to place a fragment of the calculus to be examined upon a platinum spatula, and drop upon it some common nitric acid. When uric acid is present, a lively effervescence ensues. Evaporate the resulting solution by a low heat, and add ammonia, when a purple color is produced, characteristic of the presence of uric acid.

41. "*Urate of ammonia Calculi*.—Calculi composed of urate of ammonia are of much rarer occurrence than the former, particularly in a pure state. They are generally to be found in children. They present various shades of color, between a whitish-grey and a light-brown; they have usually a smooth surface and earthy fracture, and are made up of concentric layers, which are easily separated from each other. They very seldom occur pure, commonly containing uric acid and small quantities of the phosphates. It is very easy to distinguish these calculi from those composed of uric acid. They dissolve in boiling water, except there are admixtures of other substances, whilst uric acid is very slightly soluble. When you have examined a calculus, and proved it to contain uric acid, and it also yields ammonia when treated with potass, this must not be supposed to prove that it is urate of ammonia; the generation of ammonia may also arise from the decomposition of ammonio-phosphate of magnesia present in the calculus.

42. "*Oxalate of lime Calculi*.—Urinary concretions which consist of oxalate of lime occur frequently. They are distinguished by their external appearance: those with a rugged surface, dark color, and larger size, are termed *mulberry calculi*, whilst smaller ones, with a smooth surface, are known as *hemp-seed calculi*. These calculi are always very hard, and imperfectly laminated. They almost invariably contain small quantities of uric acid, phosphates, and animal matter of uncertain composition. They are insoluble in water and alkaline fluids, but generally dissolve completely in acids. The mulberry calculi are easily distinguished by their behavior before the blow-pipe: the oxalate of lime is converted into a carbonate by heat, and this latter salt loses its carbonic acid at a higher temperature, and becomes caustic lime. After being subjected to the action of the blow-pipe, therefore, mulberry calculi may be slaked by water, and impart to it an alkaline reaction. As, however, many calculi contain some amount of carbonate of lime, which, if submitted to the above process, would produce the same result,—namely, a residuum, which slakes on the application of water,—you should never omit the employment of the usual tests for the presence of oxalic acid. For this purpose the calculus is to be pulverized, and boiled with carbonate of potass; by this means carbonate of lime and oxalate of potass will be formed; filter, and add an excess of acetic acid to the filtrate, to decompose the surplus of carbonate of potass, then, if a solution of sulphate of lime be added, oxalate of lime will be precipitated.

43. "*Phosphate of lime Calculi*.—Calculi composed of phosphate of lime are very rare. Up to the present moment no one has had an opportunity of examining such except Dr. Wollaston. Those which he has described had a smooth surface and a chalky fracture, in which distinct layers could be perceived. They contained an organic matter, by which the phosphate of lime was agglutinated, and they consequently became black before the blowpipe. By the continued application of heat they again became white, and finally fused.

44. "*Ammonio-phosphate of Magnesia Calculi*.\*—Those calculi which consist of ammonio-phosphate of magnesia are met with frequently, but those in which this double salt is combined with phosphate of lime are still more common. Both these species of concretion are similar in appearance; their surface is generally rough, and they have internally an earthy or chalky appearance, very rarely exhibiting a crystalline structure. Sometimes, however, they are covered with crystals externally, and occasionally cavities are found in them filled with crystallized ammonio-phosphate of magnesia. There is little difficulty in recognizing these calculi, or in discriminating between the two kinds, notwithstanding the similarity of their external appearance. Ammonia is evolved from both kinds when acted on by caustic potash. Both dissolve readily in nitric and muriatic acids. To an acid solution ammonia is first to be added,

\* Synonymous with ammoniaco-magnesian phosphate.

until a feeble alkaline reaction is exhibited, when a slight precipitate forms; then acetic acid, until the precipitate disappears. The addition of chloride of iron, and boiling the solution, causes all the phosphoric acid to be deposited in the form of phosphate of iron. The filtered liquid is then to be tested in the ordinary manner for lime and for magnesia.

"We now arrive at those urinary concretions which contain certain peculiar organic substances; of these there are two species; and it is both interesting and useful to become acquainted with their composition and properties. These calculi occur but very rarely. One of these species of calculi, however, has been observed more frequently in France. It was originally discovered by Dr. Wollaston, and is called cystic oxide, or cystin. It contains, as a constituent, sulphur.

45. "*Cystin Calculi*.—Cystic oxide calculi are of rare occurrence; they consist of somewhat compact crystalline masses, of a yellowish or greenish color, and smooth surface. They may be broken into fragments without difficulty; their fracture is crystalline, with the lustre of wax, and their fragments are translucent at their angles. Such calculi generally consist of pure cystin; sometimes, however, their surface is coated with phosphates.

"Urinary calculi composed of cystin are readily soluble in the fixed alkalies and in ammonia. They are thus distinguished from those consisting of phosphate of lime, oxalate of lime, or phosphate of magnesia, these being insoluble in ammonia; whilst they are distinguished from those containing uric acid by their solubility in acids.

"In order to detect the presence of cystin, the suspected calculus is to be dissolved in a strong solution of caustic potash, and a few drops of solution of acetate of lead added in excess; the liquid is then heated to boiling. If cystin be present, insoluble sulphuret of lead is formed, and precipitates, and oxalate of ammonia remains in solution. This method may be advantageously employed to test both calculi and urinary deposits for cystic oxides.

46. "*Xanthine Calculi*.—But there is another species of calculi consisting of a peculiar organic substance, quite different in constitution to cystin. This was discovered by Marcet, and has been termed, *xanthic oxide*, xanthine, uric oxide, and urous acid. The designation, xanthine, appears to be preferable, and by this we shall continue to speak of it.

"The calculi containing xanthine are as rare as those with cystin;\* their surface is generally smooth and shining, of a whitish color, but sometimes without lustre; they are rather hard, and their fracture exhibits a brownish flesh color; they consist of concentric layers without any appearance of a crystalline formation. When rubbed or scraped, they acquire the lustre of wax. These calculi show a very characteristic reaction with nitric acid. This acid dissolves them at the boiling point without the evolution of gas. This distinguishes them perfectly from uric acid calculi. The solution of nitric acid being evaporated, leaves a citron-yellow residue, soluble in caustic potash, and in this menstruum acquiring a reddish-yellow tint. The characteristic purple color which uric acid gives with nitric acid and ammonia, cannot in any way be produced with xanthine."

47. "*Urostealith*.—Urostealith is most readily detected by the effects of heat and combustion. A small piece, placed on platinum foil and heated, remains for some time solid, then commences to fuse without melting, burns rapidly, and diffuses at first a tolerably strong vapor, and very peculiar and agreeable odor, which most resembles that of shell-lac and benzoin. The odor is so strong that the smallest piece is sufficient to allow of its being distinctly perceptible. With a stronger heat, the urostealith inflames and burns with a light yellow flame. If the remaining voluminous cinder be completely incinerated, a small alkaline residue is left.

"When boiled with water, urostealith becomes soft, swells slightly, is compressible, and friable. Warm alcohol dissolves it, but with difficulty; when the alcohol is evaporated, and the residue incinerated, the above-described agreeable odor becomes perceptible. Ether dissolves it with tolerable ease; if the ether be evaporated, the urostealith is left in the amorphous state; on continuing a gentle heat, it becomes colored of a tolerably deep violet. Solution of caustic potash dissolves it readily by heat with a brownish-yellow color; if the watery part of the solution be allowed to evaporate, a quantity of brown flocks are deposited, which are again dissolved on the fresh addition

\* [Much rarer; only four cases are on record.—Ea.]

of the solvent. The product is a brown soft soap, which can be kneaded like wax, and is soluble in water. Its clear alkaline solution is decomposed by acids, and the urostealth again separates as an amorphous fat. The carbonates of soda and potash act in the same manner as the caustic potash, except that their action occurs more slowly. When the soap is treated with ammonia this does not assume so brown a color as when the urostealth is dissolved in urine. Even boiling ammonia has but little action on it; it swells, becomes soft, and saponifies but very imperfectly, the liquid becoming very slightly brownish. When heated with nitric acid, it yields a solution which is almost colorless, nitrous acid being slightly evolved. If the product is evaporated and the residue treated with ammonia, it assumes a dark-yellow color, similar, but in a less degree, to that produced by caustic potash.\*

#### § VI.—*Fæces.*

48. *Fæces.*—Enderlin has instituted numerous observations on human fæces, chiefly in reference to the salts.

A. Fresh excrements of a yellowish-brown color, pulpy appearance, and an alkaline reaction, were dried and incinerated. The resulting ash was white, alkaline, effervesced on the addition of an acid, and contained:

Tribasic phosphate of soda (a little).  
Chloride of sodium.  
Alkaline sulphates.  
Phosphates of lime and magnesia (in abundance).  
Carbonate and sulphate of lime.  
Phosphate of iron (a trace).

a. Another portion of the same excrement was extracted with water, and the brown alkaline solution evaporated on the water-bath.

During the process of evaporation there was formed on the surface a tenacious, yellowish-brown film, which, when removed, was speedily replaced.

a. One half of the evaporated aqueous extract was incinerated. The ash was very alkaline, effervesced briskly on the addition of an acid, and contained:

Alkaline carbonates.  
Alkaline sulphates.  
Alkaline phosphates.  
Chloride of sodium and earthy phosphates.

b. The other half of the evaporated aqueous extract was treated with alcohol, which assumed a tint varying from a red to a green, and had an alkaline reaction. On evaporating the alcoholic solution, an alkaline ash was obtained, consisting, for the most part, of tribasic phosphate of soda and chloride of sodium.

The membrane and other matters not taken up by alcohol, yielded a neutral ash consisting of phosphates of lime and magnesia, with traces of chloride of sodium and alkaline phosphates.

c. The portion of excrement not taken up by water, yielded a neutral ash consisting of:

Phosphates of lime and magnesia.  
Sulphate of lime.  
Traces of chloride of sodium and alkaline phosphates.

With a solution of baryta, the alcoholic solution yielded a very bulky, yellowish-green precipitate; and, on the addition of basic acetate of lead, there was a considerable sediment soluble in acetic acid, decolorization of the fluid, &c.: hence unchanged choleate of soda was present. The occurrence of this constituent was, however, by no means invariable; and, generally speaking, choleate of soda (or bile) may be expected to be absent when the fæces have remained for some time in the large intestine, and there has been full opportunity for resorption.

\* Archiv für Physiol. und Path. Chem., 1945.

It follows that the carbonate of lime is a product of the double decomposition that occurs between the sulphate of lime and the carbonate of soda resulting from the incinerated choleate of soda, or bile.

The formation of the membrane during evaporation indicates the presence of a certain amount of albumen.

In 100 parts of the ash yielded by the excrement of another individual, there were contained :

Chloride of sodium and alkaline sulphates	1.367	} soluble in water.
Bibasic phosphate of soda	2.633	
Phosphates of lime and magnesia	80.372	} insoluble in water.
Phosphate of iron	2.090	
Sulphate of lime	4.530	
Silica	7.940	
	98.932	

From the absence of carbonate of lime in this instance, it may be concluded that no choleate of soda or bile was present. The excrement was very firm and solid.

I am indebted to the kindness of Dr. Percy for the following analyses of the fæces.

1. The individual, who was about thirty years of age, had taken the ordinary diet of this country, and appeared to be in the enjoyment of perfect health.

In 100 parts of dried residue there were contained :

Substances soluble in ether (brownish yellow fat)	11.95
“ in alcohol of .830	10.74
“ in water (brown resinoid matter)	11.61
Organic matter insoluble in the above menstrua	49.33
Salts soluble in water	4.76
Salts insoluble in water	11.61

An ultimate analysis of the fæces in this case was also instituted. “I may here premise,” says Dr. Percy, “that I have invariably used chromate of lead as the oxidising body, and have occasionally sheathed the combustion tube with thin sheet copper, in order to enable me to attain a high degree of heat towards the close of the combustion, a precaution essentially necessary in the analysis of these matters, as the last trace of carbon cannot, without this precaution, be completely burned. In corroboration of this statement I may mention that the perfect incineration of fæces at a red heat requires a considerable time. The matter was prepared for analysis by first drying over the water-bath, and then either in an oven at the temperature of 212° or some degrees above, or in the salt-water bath, and by a current of air desiccated by chloride of calcium. I was extremely particular in respect to the drying, and, generally, in a second analysis, employed matter which had been subjected to the drying process for a much longer time than in the first, so that the correctness of the proportion of hydrogen should be satisfactorily tested.

1st Analysis: 7.41 grs. gave—of HO 4.23 or of H 6.64, of CO<sub>2</sub> 12.55 or of C 46.18.

2d Analysis: 7.24 grs. gave—of HO 4.44 or of H 6.81, of CO<sub>2</sub> 12.28 or of C 46.23.

Incineration: 50.13 grs. gave—of ash 8.21, or 16.37.

Nitrogen—not yet determined.

Taking the mean, we have :

C	46.20	} 100.00
H	6.72	
N & O	30.71	
Ash	16.37	

“These results are very nearly the same as those obtained by Dr. Playfair,\* at

\* Liebig's Animal Chemistry, 2d ed., p. 265.

Giessen. His analysis gives C 45.24, H 6.88, N & O 34.73, ash 13.15. These facts are worthy of attention, as they seem to show that, under ordinary circumstances of health, the composition of the feces is more uniform than we might *a priori* have anticipated. The first analysis, it will be borne in mind, was of the feces of a man in this country; the second, of a soldier at Giessen.

2. "A man undergoing the curious and rigorous discipline of training for prize-fighting. This individual, it will not be doubted, was in the possession of the most perfect health. He had been in training for about a week. Age 22; height 5 ft. 6 in.; weight 8½ stones. I request particular attention to the diet. He breakfasted at 9 a.m., and took one pound of mutton weighed before cooking. He dined at 1 p.m., took the same quantity of mutton, and about two ounces of bread. He had the same quantity of mutton for supper at 8 p.m. At each meal he drank half a pint of ale, and no other liquid during the day; nor, it must be remembered, had he any other vegetable matter besides the small quantity of bread mentioned. He walked seventeen miles daily.

#### 1st Analysis.

5.35 grs. gave—of HO 3.43 or H 7.12%, of CO<sub>2</sub> 9.73 or C 49.60%.

#### 2d Analysis:

5.74 grs. gave—of HO 3.62 or H 7.01%, of CO<sub>2</sub> 10.52 or C 49.98%

The difference between these two analyses, in respect to the carbon, is greater than should be allowed, but I had not time to make a third analysis.

Incineration: 31.42 grs. gave—of ash 4.56, or 17.51.

Mean—C . . .	49.79	} 100.00
H . . .	7.06	
N & O . . .	28.64	
Ash . . .	14.51	

'I should observe that, in drying this specimen, towards the end of the process a small quantity of liquid condensed on the surface of the tube communicating with the vessel of water which was clear and colorless, had a peculiar and extremely offensive odor, and which powerfully reddened litmus. I had not sufficient leisure to examine it more minutely at the time.\*

Unfortunately we are precluded, by want of space, from quoting Dr. Percy's analyses of the feces in disease. The most important fact elicited was the large amount of fat discharged by stool in diabetes. A full account of these analyses will appear in the second volume of Simon's Animal Chemistry.†

### § VII.—Bone.

49. Bone.—An elaborate treatise on the chemistry of bone has been recently published by Von Bibra. We extract the following analyses:

	Female Fetus at the 7th month.			
	Ulna.	Radius.	Scapula.	Clavicala.
Phosphate of lime with very little fluoride of calcium	57.63	57.67	57.13	56.95
Carbonate of lime . . . . .	5.86	5.89	5.99	5.75
Phosphate of magnesia . . . . .	1.10	0.99	1.12	1.07
Salts . . . . .	0.60	0.67	0.62	0.73
Cartilage . . . . .	34.78	34.08	34.32	34.54
Fat . . . . .	0.63	0.50	0.82	0.96

\* I strongly suspected the matter to be butyric acid, and my suspicion has since been much strengthened by my examination of a specimen of pure butyric acid, which I had an opportunity of seeing in London, at the Pharmaceutical Society. Besides, Dr. Erwin Waldele, whom I had the pleasure of meeting at Professor Graham's, informed me that Dr. Eagsky of Vienna has discovered this acid in the feces.

† The chemistry of the green evacuations, occasionally passed by children, is fully discussed in the "Practical Medicine" department, pp. 46-50.

Child aged 9 months.							
	Femur.	Humerus.	Tibia.	Radius.	Ulna.	Costa.	Scap.
Phosphate of lime with a little fluoride of calcium	48.11	50.15	48.55	45.38	48.06	42.32	42.61
Carbonate of lime	6.12	6.13	5.79	5.14	6.20	5.00	5.08
Phosphate of magnesia	0.97	1.00	1.00	0.93	1.01	0.89	0.92
Salts	1.23	1.30	1.24	1.07	1.24	1.09	1.10
Cartilage	41.71	39.53	41.50	45.65	41.70	48.55	48.36
Fat	1.86	1.89	1.92	1.83	1.79	2.15	1.93

A man 25 or 30 years of age.							
	Femur.	Tibia.	Humerus.	Ulna.	Os occip.	Costa.	
Phosphate of lime with a little fluoride of calcium	59.63	58.95	59.87	59.30	58.43	55.66	
Carbonate of lime	7.33	7.08	7.76	7.35	8.00	6.64	
Phosphate of magnesia	1.32	1.30	1.09	1.35	1.40	1.07	
Salts	0.69	0.70	0.72	0.73	0.90	0.62	
Cartilage	29.70	30.42	29.28	29.98	29.92	33.97	
Fat	1.33	1.55	1.28	1.29	1.35	2.04	

#### § VIII.—Tubercle.

50. *Tubercle*.—Amongst the contributions to chemical pathology, which have been made since our last Report, may be mentioned Dr. Wright's essays on the "Pathology of Expectoration." These have been published in the "Medical Times;" they are upwards of thirty in number, and constitute a most admirable addition to our store of knowledge in pathology and practical medicine. Dispersed as they are, over many pages, in different numbers of the periodical referred to, they are necessarily not easy of reference; and we trust, therefore, that Dr. Wright will see the necessity of shortly bringing them out in a separate form, so that they may be more readily within the reach of whosoever may require to consult them.

Dr. Wright's views on the pathology of tubercle are to some extent novel, and we think consistent with the most established facts of physiology, pathology, and chemistry. "In prosecuting this subject," he observes, "I find it most convenient to treat of tubercle according to what may be termed the natural history of its formation. This embraces two particular and definite stages, viz., its primitive, or developmental stage, and its matured, or complete stage; to which, however, may be added a third, not connected with the formative process of tubercle, viz., its softened or decomposing stage. By the term primitive stage, I mean that which is antecedent to the conversion of any, or all, of the tubercle into a yellowish, cheesy-looking, friable mass; the matured stage, which I believe to be the result, for the most part, of an imperfect and depraved organic action in the tubercular body itself, is indicated by the total conversion of this body into the mass, whose appearance I have just described; the softened stage is consequent upon a play of chemical affinities amongst the ultimate constituents of the tubercular matter, and represents various degrees of structural disintegration, fluidity, and rottenness."

"Tubercular matter," he says, "may be formed either in the blood-vessels, or externally to them. But wherever tubercle is produced, the blood itself is essentially the source of it. In those cases, numerous enough, in which tubercle is discharged abundantly, and in a state of complete maturation, from the mucous membrane of the trachea, or bronchi, or bowels, without any lesion of these parts, such matter must have been formed and matured in the circulating system, whence it was eliminated as a foreign body by the most eligible outlet."

"If we examine with a good microscope slices of the less diseased portions of the lung of a person who has died of phthisis, we generally recognize a great variety of elemental tubercular matter. The following are the chief of its appearances. Granules (resembling in aspect those of germinal cells and of pus-globules), varying from 1-800th to 1-1600th of a line in diameter; aggregated granules, easily detachable from

\* *Med. Times*, vol. xi., p. 77.

† *Loc. cit.*

each other, forming an opaque mulberry-shaped mass of variable size; cells, or vesicles, from 1-2500th to 1-1160th of an inch in diameter, of different degrees of transparency, density, and development, the complete ones consisting of an envelope and a contained albuminous fluid, with or without central or peripheral granules; and flakes or filaments of all shapes, apparently derived from ruptured vesicles. The cells or vesicles are often of larger size than those just mentioned, especially in the lungs, liver, and mesentery of tame rabbits (giving rise to the fanciful notion that they are hydatids), and in the scrofulous peritoneal deposits of pigs; but in the human subject they are rarely found of any magnitude. If the point of a very delicate needle, sufficiently heated, be passed into the interior of one of these transparent vesicular tubercles, it instantly becomes opaque throughout, from a coagulation of its albumen. This change also takes place spontaneously, at indefinite periods, after the development of the vesicular tubercles, commencing either at their circumference or their centre, and is generally the precedent of the phenomena of maturation. This opacity often occurs, and is not succeeded by any further change in the substance of the tubercular matter. Often the vesicular tubercle enlarges, so as to be readily visible by the naked eye, before becoming opaque, and as often this opacity occurs, the tubercle remaining microscopically small. Under other circumstances, the vesicular tubercle will gradually increase in solidity, and finally become firm and hard, whilst retaining, almost unimpaired, its original transparency. In this state it looks like a particle of very delicate horn. Vesicular tubercles are differently shaped; they vary with their locality; some are globular, some disc-like, some oval, and others irregularly angular. Occasionally, when the vesicular tubercle has not proceeded to the stage of maturation, but has had the watery part of its contents absorbed, the envelope shrinks, and consequently may become crenated, wrinkled, ragged, and variously misshapen.

As the process of tubercular deposition in the lungs is generally, to a certain extent, in conformity with the laws which determine the formation and regeneration of normal tissues, it not uncommonly happens that the tubercle attaches itself closely, and somewhat complicatedly, to the parenchymatous structure, and can only be separated from the latter by force, when it generally brings away with it a quantity of minute fibrous or mucous material, which gives to the circumference of the tubercle, when placed in water, a pilous appearance. This external covering was first described by Rochoux, who, however, erred in considering it an invariable occurrence, and an appendage peculiar to tubercle, instead of what it really is, an adventitious and only occasional attachment. Other appearances than those I have described as belonging to tubercle, appertain to its advanced stages, and are generally recognizable by the naked eye.\*

Dr. Wright believes, with most other pathologists, that the formation of tubercle is due to an "error of nutrition," of which he thus speaks: "Mr. Addison says that tubercles of the lungs consist of matter accumulated by colorless blood-cells." To this opinion I am not prepared to subscribe. Elementary granules may, by their aggregation and subsequent development, form colorless blood-corpuscles, pus-globules, or vesicular tubercles; but these are not convertible into each other,—they are specific structures, and cannot be transformed into any analogous structure; they can only advance or retrograde. Hence it may happen to the colorless corpuscles to form healthy tissue, whilst pus and tubercle, in every succeeding change, become more blighted and disorganized. A colorless blood-corpuscle can no more form a pus-globule or a vesicular tubercle, than can either of the latter form a blood-corpuscle. These bodies are as distinct in their microscopical appearances as they are in the circumstances of their formation, or in the final purposes which they serve, or effects which they produce, in the animal economy.

The extreme states of primitive tubercle are granules and vesicles: the former are elemental of the tubercle; the latter are the perfection of its primitive stage. In so far we see a certain correspondence between the generation of tubercle and the production of normal tissue.

Tubercle commences with an aggregation of granules; their number may be few or many. These granules, like those which form colorless blood-corpuscles and pus-globules, have a tendency to develop themselves into a higher structure, and to form cells. From some imperfection, however, either in themselves alone, or aided by a morbid action in the parts wherein they are being deposited, they either remain sta-

\* Op. cit., pp. 377-8.

tionary as granules, or proceed only to an imperfect cell, viz., the corpuscle or vesicle already described. In passing to this vesicular state, the granules, if their number were originally few, are appropriated and expended in the developing of the tubercle, which is consequently seen to possess neither central nor peripheral molecules. When the granules aggregate more numerous, some of them are elevated into a vesicle inclosing the remainder, which appear to aid in the further spontaneous actions of the tubercle, viz., those of maturation. Vesicular tubercles which contain no granules, mature much more slowly than those which are nucleated.

Primitive tubercle, though incapable of any direct approach to organization, is not, strictly speaking, an inert body; it is semi-organized, and retains some portion of that low vitality with which it was impressed in its rise and progress from a few aggregated granules. In this consists its dangerous and destructive tendency. The elements of tubercle (granules) may remain in the lungs *ad infinitum*, and neither the patients suffer from them nor physical diagnosis be able to detect their presence; and frequently, indeed, the vesicular tubercles will continue stationary for years, and though obstructing respiration in the portion of lung containing them, may not excite in it any inflammatory action, nor themselves undergo any further change. Too often, however, these semi-organized bodies, with their low vitality, perpetuate the action to which they were indebted for their origin, and in consequence pass on to an alteration both of structure and composition, and become *matured tubercles*, at which stage all vitality and all organic power leave them. This maturative action is, for the most part, performed by the constituents of the tubercle, *per se*, though it is in some measure, no doubt, dependent upon the connexion of the tubercle with a living body. It never takes place in the dead subject, nor if vesicular tubercle be removed from its site, can any artificial process induce in it the action which is essential to maturation. I have subjected this tubercle, both in its solid and fluid state, to every variety of spontaneous and chemical destruction, without having in any one instance observed an approach to that action, or to the result of it, which in the living body is the necessary forerunner of tubercular softening. Primitive tubercular matter, in its solid state, undergoes decomposition out of the body with singular tardiness. Often, indeed, it will scarcely decompose at all. I have specimens by me at this moment, which are perfectly sound and free from change, though they have been kept without any precaution for nearly five months. Even when *in situ*, it is not uncommon to see the pulmonary tissue of a dead subject sinking into putrescence around these tubercles, themselves being unaffected, or only commencing to decay. I have frequently seen the solid varieties of primitive tubercle floating unchanged in the liquid products of decomposition. And when vesicular tubercle *does* decompose, it undergoes no alteration of composition or of appearance beyond that which any simply albuminous matter suffers in the process of decay. But the action of tubercular maturation in the living body is a very different thing. From having been simply and entirely albuminous, the tubercle has become more compound in its nature. It now contains a notable, but a variable proportion of fat; occasionally gelatin; and its albumen, instead of being homogeneous-looking, has acquired an irregularly granular and massy appearance, and sometimes seems to have made an approach even to a fibrous structure. The action necessary to this change has no analogue in any process of decomposition with which we are acquainted. It is (within certain limits) to all intents and purposes an organic action. It is, perhaps, as low a form of organic action as any we are acquainted with, but is plainly an offspring of forces which are beyond those that are merely chemical and physical.\*

"The process of tubercular softening, *properly so called*, is simply one of decomposition. It has nothing in common with the development and maturation of tubercle, but is consequent merely upon a chemical change of the elements of matured tubercle." (p. 477.) Upon the subject of the absorption of tubercular matter, Dr. Wright makes certain observations as the result of extensive and carefully conducted experiments. He says, "Tubercular matter, in small quantity, in the blood, is productive of no inconvenience or injury so long as it circulates freely; and if its discharge by any mucous membrane, not likely to give it lodgment, be certain, I think it probable that tubercle might be constantly passing through the circulation without occasioning injury. Tubercle, before having commenced to decompose, is as harmless as laudable *pua*, or

\* Op. cit., pp. 418-2.



any other substance having a similar composition. The only manner in which it could prove detrimental in the blood-vessels, would be by accumulating in some situation, where, not being subsequently thrown off, it would decompose, and so lead to the destruction of the contiguous tissue, or to the contamination of the whole system." (Op. cit. p. 525.) Concerning the chemistry of tubercle, Dr. Wright says, "Its composition is scarcely less variable than are its physical appearances and properties. Like these it differs according to the age, the degree of maturation, and the locality, of tubercular matter. Chemists, as well as microscopists, have fallen into the error of taking a single specimen of tubercle in a particular state ("crude"), and from its analysis, of inferring the composition of tubercle in its entire acceptation. No error of inquiry or induction can be greater than this.

"Primitive tubercular matter, in its fluid transparent state, is purely albuminous, and affords neither reactions nor analytical results at variance with those of any simple albuminous solution. It appears to be neutral to test-paper, but galvanism or incineration furnishes evidence of the presence of soda. Sulphur is also a constituent, but in still smaller proportion.

"Solid primitive tubercle, transparent or opaque, usually answers to analysis like coagulated albumen. Often, however, owing to the length of time it may have been deposited, or the situation in which it may have been placed, it will be found to have acquired a greater or less proportion of earthy or saline matter, or both. The change appears to be effected by a process of endosmose and exosmose.

"Matured tubercle, also, according to the extent of its maturation, will vary in chemical composition. In proportion as it has advanced to maturity, will its fatty matter, or gelatin, or fibrin, or all of these, be abundant. The ratio of its earthy and saline constituents is also liable to much variation.

"In the progress of decomposition (softening) the constituents of tubercle are changed both in number and kind. The gelatin is usually the first to disappear; then the traces of fibrinous structure become indistinct or are lost; the cells are obliterated; the fatty matter is discolored and fetid; ammonia, or its hydrosulphate, is disengaged, and the mass sinks into liquidity and rottenness."

Dr. Wright says, that tubercle is apt to derive some physical or chemical peculiarity according to its site, as, for instance, in the liver, brain, mesentery, kidney, and near the rectum. (Op. cit., p. 526.) He found the composition of matured (cheesy) tubercle to vary considerably. The two following analyses he gives as the mean result of his investigations:

Fatty matter, with oil globules . . . . .	15.9
Gelatin . . . . .	6.4
Phosphates } Lime }	
Sulphates } Soda }	11.2
Muriates }	
Carbonate of lime, a trace.	
Oxide of iron, a trace.	
Albuminous matter with fibrin . . . . .	65.2
	<hr/>
	98.7
Fatty matter, with oil-globules . . . . .	7.4
Gelatin . . . . .	11.8
Phosphates } Lime }	
Sulphates } Soda }	2.5
Muriates }	
Albuminous matter . . . . .	76.9
	<hr/>
	98.6

Many papers which were deserving of notice in this and the preceding Report have been passed by for want of room. From the zeal with which chemistry in its relations to medicine is being now cultivated this will often occur, and it has been suggested to the editor of this department, that an enumeration of the leading papers and works of which he has been unable to give a notice might prove of much use to those who are investigating special points of chemistry. Some of the following essays will be noticed in the next Report.

*Periodical Literature.*

1. On the tendency of matter to harmony. A Lecture delivered before the Society of Natural History in Utrecht. By J. G. Mulder. (An excellent translation, from the pen of Dr. White, physician to the Winchester Hospital, appeared in the February and March numbers of the "Chemist." There is a striking similarity between the doctrines of Mulder and the views of the anonymous author of the "Vestiges of Creation.")
2. Experimental researches on the development of fat. By Boussingault. *Annales de Chimie et de Physique*, August, 1845.
3. Experiments on the fattening of geese. By Persoz. *Ibid.*
4. On the composition of the wax of bees. By Dumas and Milne Edwards. *Ibid.*
5. On the formation of fat in the animal organism. By Liebig. *Annalen der Chemie und Pharmacie*, June, 1845.
6. On the composition of the yolk of an egg. By Gobley. *Comptes Rendus*, Nov., 1845.
7. Contributions to the theory of digestion. By Plattner. *Müller's Archiv*, No. 4, 1845.
8. On the theory of digestion. By Hoffman. *Haeser's Archiv*, vol. 6, No. 2.
9. On the concurrence and formation of sugar in the animal organism. By Budge. *Roser und Wunderlich's Archiv*.
10. Microscopical and chemical contributions to practical medicine. By Heinrich. *Haeser's Archiv*.
11. Experiments on the artificial production of inflammatory blood by means of medicines. By Schültz. *Froriep's Notizen*.
12. On the chemical analysis and nature of some of the constituents of the blood. By F. W. Griffith, M.D. *Med. Gazette*, May and June, 1845.
13. On diseased secretions in general. By Frey. *Roser und Wunderlich's Archiv*.
14. On the quantitative analysis of the urea, potash, and ammonia, in urine, and on the composition of nitrate of urea. By Heintz. *Pogg. Annalen*, 1845. No. IX.
15. On the composition of oxalate and nitrate of urea. By Marchand. *Jour für prakt. Chemie*, Feb. 1845.
16. On the composition of nitrate of urea. By Fehling. *Annalen der Chemie und Pharmacie*, Aug., 1845.
17. On the pathological chemistry of the urine and blood. By G. Padley. *Med. Gaz.*, June 6th.
18. On the analysis of the urine of insane patients. By Alex. Sutherland, M.D., and E. Rigby, M.D. *Med. Gaz.*, June 6th.
19. On the importance of microscopical and chemical investigations in mental disease, especially in reference to the examination of the urine. By Heinrich. *Haeser's Archiv*.
20. On the frequent occurrence of alkaline urine in healthy men. By Krukenberg. *Henle and Pfeufer's Zeituch*.
21. On certain salts of uric acid. By Bensch. *Annalen der Chemie und Pharmacie*, May, 1845.
22. Researches on hippuric acid and its salts. By Schwartz. *Annalen der Chemie und Pharmacie*, April.
23. On uric oxide and its salts. By Unger. *Bericht über die Verhandl. der Kongl. Preuss. Akad. zu Berlin*. April, 1845.
24. On the urine of the herbivora. By Von Bibra. *Annalen der Chem. und Pharm.*, Jan., 1845.
25. On the urine of the herbivora. By Boussingault. *Annales de Chimie*, Sept.

*Works.*

1. Animal Chemistry, with reference to the Physiology and Pathology of Man. By Dr. J. Franz Simon. Translated and edited by George E. Day, M.A. and L.M. Cantab., Licentiate of the Royal College of Physicians. In two volumes. Published by the Sydenham Society.
2. On the Analysis of the Blood and Urine in Health and Disease; and on the Treat-

ment of Urinary Diseases. By G. Owen Rees, M.D. Second edition. (A good work as far as it goes, but not touching on many of the most important recent discoveries in animal chemistry. In fact, the author states in his preface, that he has avoided as much as possible entering into scientific details as foreign to the purpose of the work, which must be regarded as simply on proximate animal analysis. There are a few points in connexion with his methods of analysis that we shall notice in our next Report.)

3. Gregory's Outlines of Chemistry. London, 1845. (A most excellent manual.)
4. An Essay on the Pathological Physiology of the Blood. By Dr. Wunderlich, pp. 261. Stuttgart, 1845.
5. On the Analysis and Synthesis of Pseudoplastic Processes. By Dr. Zimmermann, pp. 355. Berlin, 1844.
6. The Chemistry of Vegetable and Animal Physiology. By Dr. G. J. Mulder. Translated from the Dutch, by Dr. P. F. H. Fromberg. Edinburgh, 1845. (This work is appearing in parts, two of which are now published.)
7. The Mutual Relations of Physiology and Chemistry,—a critique on Liebig's Animal Chemistry. By O. Kohlrausch. Göttingen.
8. Marchand's Manual of Physiological Chemistry. Berlin, 1844.
9. A Contribution to the Theory of Blood-Crises. By Fr. Xav. Mühlbauer. Erlangen, 1845.
10. On the Chemistry of the Bones and Teeth of Man and the Mammalia. By Vos Bibra. Schweinfurt, 1845.
11. On the Comparative Physiology of the Invertebrata—a Physiologico-Chemical Essay. By Dr. C. Schmidt. Brunswick, 1845.

## VI.

### REPORT ON THE PROGRESS OF FORENSIC MEDICINE.\*

BY WILLIAM AUGUSTUS GUY, M.B. CANTAB.

Fellow of the Royal College of Physicians, Professor of Forensic Medicine, King's College, Physician to the King's College Hospital, &c.

#### § I.—*Toxicology*

1. *Poisoning by Hydrocyanic Acid.*—The subject of poisoning by hydrocyanic acid holds the same place, in point of importance, as it did in the former Report. No less than five cases have been recorded in the English journals during the last half of the year. Of four of these it is proposed to give a full account, adding such additional facts and observations as can be gleaned from the cases themselves, or from the commentaries which accompany them.

*Two Cases of Poisoning by Prussic Acid, by Mr. Nunneley, of Leeds.*—Two interesting, instructive, and minutely detailed cases of poisoning by this acid, were communicated to the "Provincial Medical and Surgical Journal,"† by Thomas Nunneley, of Leeds. The particulars of the first case are condensed from the evidence given before the inquest held upon the body; those of the second case, which terminated favorably, chiefly from the man's own account.

The leading particulars of the first case, as gleaned from Mr. Nunneley's communication, are as follows:—The deceased purchased of a druggist an ounce of prussic acid, labelled "Scheele's strength," but which was subsequently proved by careful analysis to contain only 1·5 per cent. Of this it would seem *probable*, that five drachms and a half were swallowed by the deceased, as the bottle when found on his person contained two and a half drachms. The circumstances under which the poison was swallowed are involved in some obscurity; but, from a comparison of all the facts detailed in evidence, or observed by Mr. Nunneley himself, it is most probable that the deceased poured the poison into a tumbler which he found on the table of a room on the ground floor, swallowed it, rinsed the glass out, threw the water used for this purpose into and about a spittoon, replaced the stopper in the bottle, and put the bottle into his pocket, ran up stairs with the tumbler to a room on the floor above, placed the tumbler on a table, and then threw himself on the sofa at the end most remote from the part of the table on which he had set the glass. About three minutes from the time that the deceased was heard to enter the lower room, he was found by one of the witnesses (Mr. Tennant) lying on his back on the sofa, but as soon as he heard him enter the room, "he sprang up, and sat upon-an-end." He did not speak, but appeared like a man who was suffering from an excess of drink. Mr. Tennant then left the room, and returned almost immediately, when he found the deceased sitting in the same position, with the exception that he was reclining on the right side, with his head on the sofa cushion. Mr. Tennant then said, "You seem ill, sir," when he made an attempt to speak, but was not intelligible. The witness then went close up to him, and said, "You must excuse me interfering with you, but you seem very ill," and then asked if he could be of any assistance to him, if he might fetch a doctor. The deceased in reply laid his hand on his breast, and said, "Oh no, it is too late, it is too

\* It is but justice to Dr. Guy to state that in consequence of the late arrival of some of the Foreign Journals devoted to his subject, there must of necessity be some omissions in the present report. The great length to which some of the present reports have extended has also rendered it necessary to omit several abstracts from the English Journals of the last half-year. In the first report of the ensuing year, the omissions from the Foreign Journals will be supplied, and a report on the important subject of Public Health will be added to the volume.—Ed.

† July 23 and 30, Aug. 13, 1845.

late!" These were the only words he uttered. Mr. Tennant then rang the bell for the landlady who attended the deceased, while Mr. Tennant ran for a medical man. In her evidence she stated, that she thought the deceased was in a fit, and accordingly loosed his handkerchief and collar, and bathed his head with brandy. In about five minutes from Mr. Tennant's leaving the room, and about a quarter of an hour from the time that the deceased was heard to enter the house, Mr. Nunneley arrived. He found the deceased still lying on the sofa, resting on his right side, unable to speak, and apparently unconscious, but the pulse was still beating slowly, but distinctly. On reaching the top of the stairs, near the door of the room, Mr. Nunneley thought he detected the smell of hydrocyanic acid; but on going to the end of the room where the deceased was, he could not detect it in consequence of the strong odor of the brandy, which had been used to bathe the head of the deceased. Suspecting that the deceased had taken hydrocyanic acid, no time was lost in dashing cold water upon him, which "decidedly roused him." This remedy was repeated with effect several successive times; "it roused him, and he took a deep inspiration." Ammonia was also administered, and freely applied to his chest. A small quantity of a solution of chlorine was also given; and the feet and legs were placed in a hot mustard bath. The deceased was conscious of the administration of the ammonia. In spite of these remedies, however, "he gradually became stiller, and sank; his legs, arms, and chest were convulsed slightly, the upper extremities more than the lower, and the jaw was fixed; the eyes were prominent and staring, and the pupils widely dilated; but before death they became much less so; they were glassy. The countenance was puffed up and dark, rather purple. There was some foam about the mouth; he breathed slowly and convulsively, something like violent sobbing." "The blood-vessels were injected, and the whole of the countenance bloated. The hands were partially contracted, the fingers rigid, and about the nails of a dark lead color." The time which elapsed between the arrival of Mr. Nunneley and the death of his patient amounted to about half an hour; it therefore follows, that he survived the taking of the poison three-quarters of an hour. The following is a short abstract of the post-mortem appearances presented by the body five hours and a half after death. *External appearances.*—Body still warm; upper parts pallid, but all the depending portions livid, the cutaneous veins, especially those of the legs, filled with fluid blood; the limbs about as rigid as is usual at the same period after death; the fingers, at the root of the nails, discolored; the countenance placid, but somewhat turgid; the eyelids closed; the eyes prominent and glassy; the pupils moderately dilated; the jaws contracted, and the lips closed. "There was the odor of hydrocyanic acid in the room near the body. The degree, however, in which this could be perceived by those present, on applying in succession the nose to the nostrils of the deceased, differed materially; by Dr. P. Smith very strongly; by myself decidedly, but not what I should call strongly; and by the other two gentlemen, scarcely, if at all; indeed, they could not say they did perceive it." Elsewhere, Mr. Nunneley says, "It (the odor) was perceptible to my nostrils even before the body was opened. It was so strong that I had an effect from it for some hours afterwards; that is, constriction about the pharynx." *Abdomen.*—On opening the peritoneum, the odor of hydrocyanic acid was instantly perceptible in any part of the room; but most distinctly close to the stomach. All the viscera healthy. No odor of the acid in the intestines; but a sour smell, with an exceedingly strong odor of the acid in the contents of the stomach. The stomach contained rather more than a pint of half-digested matter (he had eaten a hearty breakfast about two hours and a half before taking the acid), and its mucous membrane exhibited the turgescence of the vessels usual during the process of digestion. *Chest.*—Lungs healthy; large bronchial tubes filled with reddish frothy serum. Heart healthy, but completely distended on both sides with dark fluid blood. *Head.*—Chronic inflammation of the arachnoid; serous effusion on the surface and into the ventricles; substance of the brain firm, perhaps rather more so than usual. The chemical analysis was performed by Mr. West. The substances submitted to analysis were the contents of the stomach, the matters contained in about fifteen inches of the ileum, two ounces of blood from each side of the heart, and three drachms of serum from the brain. *Contents of the Stomach.*—Strong acid reaction; marked odor of prussic acid; decided reaction with the silver and iron tests; four-tenths of a grain of pure hydrocyanic acid, equal to twenty-seven grains of medicinal acid of 1.5 per cent. (the strength of the acid in the bottle), were obtained from the contents. From experiments on the

contents of the ileum, the blood and the serum of the brain, Mr. West states that he thought himself "warranted in stating, the arterial blood, and the fluid from the brain, as well as the contents of the ileum, to contain a distinct, though very slight trace of hydrocyanic acid; the venous blood none." This fact is inferred from the production of a film upon a drop of nitrate of silver inverted over the substances in question. The products of the distillation of the contents of the ileum precipitated nitrate of silver, but did not yield Prussian blue: the liquid distilled from the arterial blood and serum, neither affected the silver test, nor yielded Prussian blue. It is obvious, therefore, that the presence of hydrocyanic acid in these fluids must be considered to be full as doubtful as the passage just quoted would make it. The parties present thought that they perceived the odor of prussic acid in the serum from the ventricles of the brain; "Mr. Nunneley with some hesitation, but still he thought he could perceive it; Dr. P. Smith perceived it so decidedly as to have no hesitation about it."

Such is a careful abstract of this extremely interesting case. Some observations communicated by Mr. Nunneley to the succeeding number of the same journal, will be noticed in their proper place.

The second case of poisoning by this acid reported by Mr. Thomas Nunneley will be found in the "Provincial Medical and Surgical Journal."\* When Mr. Nunneley saw the patient the symptoms had passed away, but "he was able to give a detailed and perfectly natural account of the whole transaction, and of his feelings at the time of becoming insensible. This he repeated the next day, and the different parts of it were so confirmed by different persons, that there cannot be any doubt of its accuracy." The patient, a book-keeper in a large manufacturing establishment, 40 years of age, bought three-penny-worth of prussic acid under the pretence of poisoning animals, and on going to bed at night undressed himself by the bedside, nearly filled a wine-glass with gin, emptied the bottle containing the hydrocyanic acid into the glass, corked the bottle, and placed it on the chimney-piece, drank off the contents of the glass, which he set down, then threw down the bed-clothes, got into bed, and covered himself up. He now said to his wife, "Well, Bessy, I have taken something, and it will be all over with me in a few minutes." She immediately jumped out of bed, and ran screaming to the door. When she left the bed, the child, who was frightened, crept to its father, and said to him, as he informed Mr. Nunneley, "Father, don't leave me;" to which he replied, putting his arms round it, "No, my dear, I won't leave you." He now perceived his jaws becoming stiff, and crammed the sheet between his teeth, thinking, as he said, that he would like something to hold by: he felt his jaws becoming stiffer and tighter, which was all he was conscious of until the water was dashed in his face, when he raised himself, and to his surprise, found several persons round the bed. He had no idea how long he had been unconscious, and said that he felt no pain till the water was dashed upon his face; the sensation he then felt, he said, was most awful, he could not describe it. About two minutes from the time the poison was taken the wife returned, and found her husband lying upon his back, insensible, breathing hard, the eyes wide open and staring, the face "black red." In about ten minutes from the swallowing of the poison Mr. Bishop reached the house, and found the man foaming at the mouth, the face rather pale, and covered with large drops of sweat, the arms rigid, the hands half extended, the jaws so firmly closed as to prevent him from giving an emetic of sulphate of zinc. Mr. Bishop immediately dashed cold water over the head and neck, when the man raised himself up, and became sensible; ammonia was then rubbed over the hands, the smell of which he quickly perceived, and said he felt better for it, and the sulphate of zinc was administered; vomiting soon followed, the matter ejected smelling strongly of hydrocyanic acid. About a pint of blood was next taken from the arm, which had a muddy-red brick tint, and coagulated as usual. There was a difference of opinion as to the blood having an odor of prussic acid, but the poison could not be detected in it by chemical tests. The strength of the acid was found to be three and a quarter per cent. of real acid. The quantity of acid taken was estimated at forty drops, so that the man must have taken nearly one grain and a half of anhydrous prussic acid. Twenty minims of the same preparation destroyed a small half-grown mongrel dog in two minutes and a half, and a full-sized terrier bitch in one minute.

\* Aug. 12, 1845.

A report of the same case by Mr. Edward Bishop, surgeon of Kirkstall, agreeing in all essential particulars with the foregoing, will be found in the "Lancet."\*

*Two cases of Poisoning by Hydrocyanic Acid, by Mr. Hicks, of Newington.*—Mr. James Hicks, of Newington, has made an important addition to our knowledge of the effects of prussic acid, by the publication of two cases, accompanied by some judicious comments, in the pages of the "Medical Gazette."† The first case is an abridgment of one published in a former number of the Gazette; the second is related, for the first time, from memory. The following are the leading particulars of the first case. A female, about 22 years of age, swallowed a draught containing, as ascertained by analysis, *nine tenths* of a grain of pure anhydrous acid. It appears, from the statement of the father, who was present when the medicine was taken, that, on swallowing it, the girl started up, threw her hands over her head, drew a deep gasping breath, stood for a second, and, then, running forward for a short distance with great violence, fell with her head first to the ground, after which she never moved, but continued to make a moaning noise for five minutes afterwards. On Mr. Hicks's arrival he found the girl lying on her back, perfectly insensible, with her teeth clenched, foam issuing from the mouth, and the face so greatly congested as to be almost purple; the breathing was slow, laborious, and at long intervals; the pulse imperceptible, and the action of the heart indistinct; the eyelids were partly closed, the eyes appearing as if pushed forward between them, the pupils fully dilated, and insensible to light; the body was so strongly convulsed that the head seemed buried between the shoulders, and the arms were nearly turned round by the action of the pronator muscles. Mr. Hicks's first impression was that the patient was laboring under some form of epilepsy; but having ascertained that the symptoms came on immediately after taking a dose of medicine, he was soon convinced, by the taste and smell of the liquid, that she had taken prussic acid. Ammonia was accordingly applied to the nostrils, the cold effusion to the head, and a fruitless attempt was made to administer some brandy and ammonia. In spite of this treatment "the breathing became gradually slower, and at longer intervals, until it entirely ceased, death appearing to have been caused, in this instance, by the perfect inability of the patient to get air into the lungs by inspiration; the time that had elapsed between taking the poison and death being twenty minutes." The body was examined ninety hours after death, and presented the following appearances. Externally it had much the appearance of a person who had died by asphyxia; the teeth were clenched, the mouth covered with foam, the face of a dusky red hue, and the whole of the depending parts of the body of a dark purple or violet color. The internal appearances were as follows. *Head.*—The dura mater and sinuses much congested, the whole substance of the brain dotted with fluid black blood, the ventricles empty, and the plexus choroides pale and bloodless. No odor of prussic acid perceptible. *Chest.*—Odor of prussic acid distinctly perceptible, far more so than in any other part of the body; lungs healthy, but much congested; the right ventricle of the heart loaded with blood; the aorta empty; the blood fluid and very black. *Abdomen.*—Stomach containing about four ounces of fluid, smelling strongly of prussic acid; its lining membrane, with the exception of a small red patch on the posterior part, near the cardiac orifice, healthy; the kidneys much congested, and of a dark pinkish hue; the rest of the viscera healthy. The contents of the stomach were examined five days after death. The odor of prussic acid was still perceptible, and the poison was detected by the iron and silver test. It was ascertained that the quantity of the poison taken did not exceed *nine tenths* of a grain of pure anhydrous acid, a quantity equivalent to 18 gra. of Scheele's acid, or 45 of the pharmacopœial acid, the former of which contains five per cent., and the latter two per cent.

A report of this case, differing little from that published in the "Medical Gazette," was communicated by Mr. Hicks to the "Lancet,"‡ and is followed by a short account of the same case, drawn up by Mr. Watson and communicated by Dr. Letheby. The only discrepancies which it is necessary to point out are the following:—1. The prussic-acid lotion, which was taken by mistake, contained, according to Mr. Hicks, three grains and a half of anhydrous acid; but according to Dr. Letheby's analysis, four grains. The fourth part, therefore, would contain, according to the first estimate, rather less than nine tenths of a grain; and, according to the second, one grain. 2. Mr. Hicks states that death took place in twenty minutes; Dr. Letheby, on the author-

\* Sept. 20, 1845.

† New Series, Nos. 11, 14, and 15

‡ July 26, 1845.

ity of Mr. Watson, "just fifteen minutes from the time of her taking the medicine."

3. In addition to the statement that the odor of the prussic acid was distinctly perceptible in the chest, we are told that "this was still more marked in the fluid contained in the pericardium." 4. The chief discrepancy, however, is to be found in the description of the stomach and its contents. Dr. Letheby says, "the stomach contained two ounces of a thick whitish fluid, apparently composed of biscuit and water. Neither of the three gentlemen whom I have named (Messrs. Watson, Waterworth, and Hicks), could detect any odor of prussic acid; but it was evident to myself, even on the following day. On subjecting it, however, to a chemical analysis, I could but barely recognize the presence of this poison. The interior of the stomach presented those marks of ecchymosis which I have noticed and described in my three former cases." The following facts are necessary to complete the case. The deceased did not speak after taking the poison. She was not sick; nor were the faces or urine expelled. The absence of shriek or scream has been already noticed.

Mr. Hicks's second case is as follows. "A girl having quarrelled with her lover, expressed a wish to leave the room, on account, as she stated, of feeling faint; but she had not done so more than a minute than she was observed to throw her hands over her head, and then fall to the ground; the breathing for a time was quite imperceptible, when, after making a few gasps for breath, she died five minutes after taking the poison, without having been in the least convulsed from the first. Within a short time after she died I arrived at the house; at this time the body was still warm, but, with the exception of a pallid state of the countenance, there was not an unnatural appearance to be seen about the corpse. It appears in this case that the girl took the poison as soon as she had left the room, and that she merely complained of feeling faint as an excuse for doing so. But the most interesting facts were, that, notwithstanding the dose was large, being an ounce of Scheele's, she had sufficient time to put the bottle into the front of her dress prior to volition being destroyed, while, at the same time, there were no convulsions, neither was there any scream, the girl falling down without making any noise whatever."

*Case of Poisoning by Prussic Acid, by Dr. Guy.\**—This case, of which the leading particulars are stated below, is interesting, first, by showing that a considerable interval of perfect consciousness, and complete command over the voluntary muscles, may intervene between the swallowing of a large dose of the acid and the development of its characteristic effects; and, secondly, as an instance of attempted suicide, in which the impulse to the commission of the act preceded the act itself by a very short interval of time.

There are some few facts of importance established by the foregoing cases which deserve to be briefly considered. This will be best done under distinct heads.

**SYMPTOMS.—The Shriek.**—The preceding cases give no confirmation to the importance attached to the shriek as a symptom of poisoning by prussic acid. In Mr. Nunneley's fatal case no shriek was heard, and it is highly improbable from the facts detailed in evidence that any could have been uttered. The shriek was also absent in Mr. Nunneley's second case, in both the cases reported by Mr. Hicks, and in Dr. Guy's case. It is very difficult, therefore, to understand whence the strong impression which has existed as to the importance of this symptom could have arisen. It is certainly not from observation in the human subject, unless indeed the exclamations uttered in one or two reported cases, or the loud gasping inspirations observed in other instances, have been confounded with a scream or shriek; so far from the shriek being a common symptom, Mr. Hicks says, "Although I have read over every case published in the different works on poisons and medical jurisprudence, I have not found a single instance where a shriek has been mentioned as occurring prior to death." In animals, moreover, the shriek, though of more frequent occurrence than in the human subject, is by no means a constant symptom. Even when, as in the case of Mrs. Belaney, a shriek is reported to have been uttered, it is by no means satisfactorily made out that the scream or shriek was a symptom of poisoning by prussic acid. It is fully as reasonable to suppose that in her case it was a simple expression of alarm on finding that she had swallowed some of "that hot drink," of the fatal properties of which she was probably not ignorant. In the case of Sarah Hart, the noise which alarmed her neigh-

\* Medical Times, November 22, 1845.



bor was not a shriek, but "a moan or stifled groan,"—probably the loud gasping inspiration which was so marked a symptom in Dr. Guy's case.

*Acts of Volition.*—The foregoing cases form a very useful addition to our information on this subject. In Mr. Hicks's second case the girl threw her hands over her head, fell to the ground, and after a few gasping respirations died in five minutes. The only act of volition consisted in placing the bottle in the front part of her dress. His first case was marked by stronger muscular contractions but by no act of volition. The girl started up, threw her hands over her head, drew a deep gasping breath, stood for a second, and then, running forward for a short distance with great violence, fell with her head first to the ground, after which she never moved, but continued to make a murmuring noise for five minutes afterwards. She died at the end of twenty minutes. The other three cases were characterized by the performance of several acts of volition. After a dose of prussic acid which under less favorable circumstances would probably have proved rapidly fatal, the young lad, whose case is recorded by Dr. Guy, after swallowing the poison got out of bed, walked round the foot of the bed to a chest of drawers at some little distance from it, placed the stopper very firmly in the bottle, laid it on the drawers, walked back to bed, sat on the side of it, and then for the first time lost all consciousness. Mr. Nunneley's cases are still more remarkable, as the patients not only moved about, but spoke and answered questions after taking the one a fatal, the other a large, dose of prussic acid. The two cases are among the most remarkable and instructive yet recorded. For the several acts of volition performed, the reader is referred to the cases themselves. The fact that both patients enjoyed the use of speech for some little time after taking the poison is well worthy of remark. The subject of the first case answered a question addressed to him some minutes after he had swallowed the poison, and the man who recovered retained the use of his speech till the jaws gradually closed. If these facts had been known to the profession before the trial of Belaney, the medical witnesses would not have expressed themselves in such decided terms as to the improbability of voluntary motion or speech after the utterance of the shriek, especially if they had formed the very feasible opinion just expressed, that the shriek might not, after all, have been a symptom of the poisoning, but merely an expression of terror uttered during the interval of perfect consciousness and self-command which so often follows immediately on the swallowing of the poison.

*Duration.*—In Mr. Nunneley's first case, the duration, as far as it could be ascertained, was three quarters of an hour; in Mr. Hicks's first case fifteen or twenty minutes, in his second case five minutes.

*Dose in Fatal Cases. Smallest Fatal Dose.*—In Mr. Nunneley's fatal case, the quantity could not be ascertained. It is probable, however, that it amounted to four drachms and a half of acid containing one and a half per cent. of pure anhydrous acid. One ounce had been purchased, and the bottle when found contained two drachms and a half. At any rate, this case throws no light on the question of the smallest dose which may prove fatal. In Mr. Hicks's first case the fatal dose did not exceed nine tenths of a grain of anhydrous acid, or, according to Dr. Letheby's analysis, a grain.

*Quantity taken in Cases of Recovery.*—In Mr. Nunneley's second case, the quantity of anhydrous acid taken was estimated by Mr. West at *one grain and a half*. In Dr. Guy's case, neither the quantity nor the strength of the preparation could be ascertained.

*TREATMENT. Cold Affusion.*—"Of all the remedies I am acquainted with," says Mr. Nunneley, "I should be disposed to place most reliance upon cold affusion. In this instance (the fatal case) more effect was produced by the dashing of cold water than by any other means." By way of illustration of the value of this remedy, Mr. Nunneley gives the following. "Some years ago I well recollect taking a very large Newfoundland dog to the side of a pond, and giving him upwards of a drachm of hydrocyanic acid, originally of Scheele's strength, but having been kept some time, it had probably lost something of its strength, yet, I am convinced, was sufficiently potent to destroy life. He almost immediately began to stagger, when two of us seized him by the leg, and threw him into the water, in which he swam about for a time, and presently came out, not much the worse for the dose."

*Tests.*—Mr. Nunneley, in citing Mr. West's analysis of the contents of the stomach in the fatal case reported by him, impugns the accuracy of the statement made in toxicological works, that the cyanide of silver is insoluble in cold, though soluble in

boiling nitric acid. Dr. West says, "I applied the acid, cold, to the washed precipitate, and found it to dissolve without heat. I formed a fresh portion of cyanide from some Scheele's acid; this also dissolved in cold nitric acid. It appears, therefore, that the supposed insolubility is at most a matter of proportion, and should not be described as a characteristic of the cyanide." Mr. Nunneley corroborates this statement. "I have tried the effect of nitric acid upon cyanide of silver, made with hydrocyanic acid of different strengths, as well as nitrate of silver solutions of different strengths, and I am satisfied that it is, as stated, only a question of proportion. If the precipitate is not very copious, and occasioned by only weak solutions of the acid and salt, then cold nitric acid dissolves it, even if the acid be not of the strongest; but, on the contrary, if the precipitated cyanide be abundant, in large flakes, and made from stronger solutions of the nitrate of silver and hydrocyanic acid, then concentrated boiling nitric acid is required for its solution." [This statement is correct, and as it affects the value of a very delicate test, on which much reliance is placed, it is not unimportant.]

Mr. Hicks has tested the relative delicacy of the iron and silver tests, and of the odor of the acid. When the tests were added to the solution of the acid the limit in the case of the iron test was 1 minim of prussic acid to  $\frac{3}{4}$  iv distilled water; in the case of the silver test, 1 minim to  $\frac{3}{4}$  xvj, with which quantity a milkiness was obtained. There was a faint color when the proportion was 1 minim to  $\frac{3}{4}$  iv, and a doubtful result with  $\frac{3}{4}$  viij and  $\frac{3}{4}$  xvj. When watch-glasses moistened with caustic potash and a solution of nitrate of silver respectively, were held over the solution of hydrocyanic acid, sulphate of iron and muriatic acid being subsequently added to the liq. potassæ, the iron test gave "traces" of its characteristic action with 1 minim in  $\frac{3}{4}$  viij, and the silver test a film with as high a degree of dilution as 1 minim in  $\frac{3}{4}$  xxxij. It would, therefore, appear that the modification of the iron and silver tests proposed by Mr. Taylor, possesses, as might be anticipated, greater delicacy than the same tests added to a solution of the acid. Mr. Hicks has also instituted some experiments, with a view of determining the value of this modification of the iron and silver tests as applied immediately, and without previous distillation, to the human body or to the contents of the stomach. The following is a short summary of his experiments: 1. The stomach of a dog, which had been killed by three drachms of prussic acid, after being well washed and allowed to remain some time in water, was placed in a wide-mouthed bottle, over which a watch-glass, moistened with nitrate of silver, was placed. In ten minutes a white film of the cyanide of silver was deposited on the glass. 2. A cat was killed by 20 minims of Scheele's acid poured into the mouth. Eight hours after death, a small aperture was made in the parietes of the chest, and a watch-glass accurately fitted over it. In half an hour a white margin was formed, and, in an hour, the whole portion wetted with the nitrate of silver was covered with a distinct film of the cyanide, perfectly insoluble in cold nitric acid, but soluble in the acid when boiled. The iron test subsequently applied gave no indication of the presence of prussic acid. The whole contents of the chest, the stomach, and the lower part of the mouth, were then placed in a bottle, and, on the glasses being applied accurately, the presence of the acid indicated by both tests. But, on submitting the same to distillation, it could not be detected in the distilled liquor, either by the odor, or by the iron and silver tests. 3. The third experiment consisted in pouring into the stomach of a man, who had recently died, half a pint of porter mixed with half a drachm of Scheele's acid, containing 4 per cent. or 1·12 grains of anhydrous acid. It was laid in a cool place, and examined two days after. The liquid, which had a *beery* smell, but no odor of prussic acid, was put into two bottles, over the mouths of which strips of glass moistened with liq. potassæ and solution of nitrate of silver, were placed. In less than ten minutes, most decided proofs were obtained of the presence of the acid, by the formation of white cyanide of silver in the one and Prussian blue in the other, on the subsequent addition of ferri sulphas and muriatic acid.\*

*Odor.*—Mr. West, who performed the analysis of the contents of the stomach, and the other fluids taken from the body, in the fatal case recorded by Mr. Nunneley, says, "I have distilled a portion of the contents of the stomach, at this time, twenty-three days after the poison had been taken, and find the smell, the precipitate with nitrate of silver, and the Prussian blue precipitate. All these are produced, apparently, in the

same degree as at first. This case is, therefore, opposed to the common notion of rapid decomposition of the acid."\*

Mr. Hicks, in the course of his comments on the first case reported in the "Medical Gazette" (New Series, No. 14), draws attention to the fact that the odor of the poison was more distinctly perceived on opening the chest than even in the abdomen, and he corroborates this statement by experiments on animals. "In many instances," he says, "where I have destroyed rats, the quantity has not exceeded four minims of Scheele's acid; still, on opening the chest immediately after death, as soon as all signs of life had disappeared, the odor has been distinctly recognized in that cavity, even when not at all presented in the stomach."

**EXPERIMENTS ON ANIMALS.**—The following observations form part of Mr. Nunneley's commentary on the case reported by him in the "Provincial Medical and Surgical Journal:" "Out of the great number of dogs, cats, and rabbits, which I have destroyed by the acid, I believe the majority did not shriek. In some the effect is almost instantaneous,—a few violent struggles, followed by a rest; then a struggle and cry; an involuntary passing of the urine or feces, and death,—the heart pulsating for some time after. All other appearances of life have gone, the creature scarcely having moved from the spot. At other times I have seen a dog run about staggering for a minute or more, making attempts to howl, but without succeeding. On the whole, I cannot but think that the instantaneous effects of hydrocyanic acid have been exaggerated, and that the quantity necessary to procure death has been somewhat under-estimated. But different animals will be very differently affected. Thus birds die almost instantaneously. It is sufficient to put the beak of a small bird (a sparrow) into the mouth of a bottle containing only a very small portion of the acid, and the vapor will, in a few seconds, quietly, as though paralysed, without convulsions, destroy it. Mice are very susceptible of its action; rabbits are much more so than either dogs or cats. On the other hand, cold-blooded animals are almost proof against its influence. I have given it to frogs without producing much effect."

Mr. Hicks states, *inter alia*, that in experiments on dogs and cats he has never known a longer period than forty seconds to elapse before the effects of the poison became visible; and that he has not met with a single instance of death taking place without being preceded by convulsions. He also confirms the statement made by Mr. Blake, that the effects of the acid are not so prompt when it is introduced directly into the stomach, as when its vapor has access to the lungs.

Some useful comments on recent cases of poisoning by prussic acid, on the tests for the poison, and on the treatment, will be found in the "Monthly Journal of Medical Science."† Much stress is there laid on the value of bleeding from the jugular vein, as a remedial agent, and the practice is enforced by a long quotation from Dr. Lonsdale's treatise.

2. *Poisoning by Bitter Almonds.*—Dr. Letheby reports the following case, which is given with slight abbreviations. A boy, 13 years of age, was left in charge of his father's shop. He was seen well and cheerful at half-past three o'clock in the afternoon, but a little before four, the sister, a child ten years old, found him lying on the floor. She immediately called the father, who found him stretched along the floor upon his back, perfectly motionless and insensible; his face deadly pale; his eyes open and rolling from side to side, and panting for breath. His father raised him into the sitting posture, and then noticed that his limbs, though quite supple, were powerless. In five minutes he was seen by Mr. Henry, a surgeon, who found him still insensible, his countenance placid, but very pale, his eyes half open, fixed, and the pupils dilated, and the lid did not move when the eye was touched. He was breathing slowly, deeply, and at intervals of a minute or so. The pulse at the wrist was gone, though the heart was still beating feebly. Cold water was dashed over the head and face, and an ineffectual attempt was made to administer stimuli by the mouth. About four or five minutes after his arrival the child died, and it is presumed that this must have been about a quarter of an hour from the time of his swallowing the poison. *Post-mortem* examination twenty-four hours after death. Face, placid but pale; eyes, half open; foam at the mouth, having the odor of bitter almonds. The depending parts of the body livid; the lungs congested; the right side of the heart gorged with dark fluid blood; the odor of the poison perceptible in the abdomen, but not elsewhere. The stomach contained

\* Prov. Med. and Surg. Journ., July 30, 1845.

† No. lvi., Sept., 1845.

twelve ounces and a half of a pulpy, semi-fluid matter, in process of digestion, and having a strong odor of bitter almonds. The internal coat of the stomach, with the exception of some red petechial patches along the greater curvature, was pale. On distilling the contents, with nitrate of silver, one grain of cyanide of silver was obtained, indicating about two-tenths of a grain of pure hydrocyanic acid. On further distillation the volatile oil of the bitter almonds was obtained, free from prussic acid. The points of medical interest in the case were the absence of convulsions; the fact that the boy did not speak after he was seen, that there was no scream, and no evacuation of the stomach, bladder, or rectum. He appeared to die from paralysis of the respiratory muscles, the breathing becoming slower and slower.

Dr. Letheby adds the following summary of the symptoms of poisoning by this agent. "Those symptoms which appear to be most constant in the cases of poisoning, by bitter almonds or cherry laurel, are a cadaverous or mortal paleness of the face and body, together with great coolness of the extremities; an almost imperceptible pulse, a slow or panting respiration, and, in the generality of cases, there are no convulsions, but a paralysis, first of the voluntary muscles, and then of the involuntary; after this a profound coma supervenes, and then death. Upon a post-mortem examination, we find nearly the same appearances which hydrocyanic acid produces. The face and highest parts of the body are generally pale, the dependent livid, the countenance is generally placid, the eye half open, glassy, and prominent, the pupil dilated; foam may be adherent to the mouth, and it will smell of the poison; the lungs are greatly congested; the right side of the heart, and the *venæ cavæ*, gorged with black, uncoagulated blood; the cavities generally have a strong odor of the bitter almond. The stomach may or may not be empty; its contents will always, if recently opened, give out a powerful smell of the oil; the inner coat is generally pale, excepting in one or two places, where there will be a blush of red (I have seen this in three cases of poisoning by oil of bitter almonds), and, altogether, there will be less doubt of the action of the poison than in a case of poisoning by prussic acid, for a greater evidence will be furnished by the odor, which is sure to be present in the stomach.\*

3. *Poisoning by Acetate of Morphia*.—An apothecary's assistant, 24 years of age, swallowed, at noon, fifty-five grains of acetate of morphia, in two ounces of gum water. He then forwarded a letter to his master, informing him of what he had done. The master arrived in half an hour, and gave him, with some difficulty, and without effect, two grains of tartar emetic in an ounce of water, followed by two tablespoonfuls of olive oil. Up to this time the only symptom present was slight giddiness, which soon disappeared, and the lad went for a walk with one of his companions, entered a café, and drank half a bottle of beer. At the end of an hour and a half the lad complained of slight giddiness, a sensation of weight in the limbs, and a slight tendency to sleep. After two hours he was taken to the hospital, put to bed, and made to swallow three grains of tartar emetic, and twenty-four grains of ipecacuanha, in two doses, at an interval of half an hour. Though the operation of the emetics was assisted by tickling the throat, vomiting did not occur, and an œsophagus tube was introduced without effect. At the end of two hours and a half the face, which was previously pale, assumed a violet hue; the eyes were injected, and turned upwards and outwards; a viscid perspiration broke out on the skin; the hands and legs grew cold and livid; the lad answered questions only by monosyllables; fell by degrees into a profound sleep; the head fell forward on the chest; the eyelids closed; and the body, when left to itself, fell on the side; the legs bent under him;—in a word, he was in the condition of a drunken man. The breathing in the meantime was natural. A pound of blood being taken from the arm, the patient rallied slightly, and complained of not being able to swallow. The pulse, which up to this time was soft and somewhat frequent, became full, hard, and slow, and there was a troublesome itching of the forehead, nose, and lips. This symptom, which began at the end of an hour, was at its height at two hours, and after four hours existed only at long intervals. The treatment now consisted of ammoniacal frictions to the belly and extremities, moxas to the legs, and repeated shaking of the body; but all in vain. The face was distorted; the eyes dull and sunken, and drawn upwards and outwards; and the entire surface of the body was icy cold. At the end of three hours a drachm of tincture of iodine, and the same quantity of hydriodate of potash, in three ounces of water, was given in two doses, at an interval of a

\* *Lancet*, July 13, 1845.

quarter of an hour. Immediately after the second dose, the patient rejected what he had taken, but he slept while he was vomiting. Strong coffee was then given every five minutes, which was followed each time by vomiting. *Four hours.* The coma is still more strongly marked, and the patient can only be kept roused by pinching, tickling, and shaking him strongly. He can be made to speak, but will leave a word half uttered. He was again bled to the same extent as before, with the effect of lessening the coma. *Four hours and a half.* Face violet; the members contracted and stiffened; he is speechless, and cannot be made to open his eyes. Friction of caustic ammonia to the epigastrium, and a blister to each limb. At the end of *five hours* a third bleeding was performed; strong coffee was still administered, and two blisters were applied to the shoulders. *Five hours and a half.* From this time the patient began to improve; opened his eyes, though with great difficulty; regained the use of his speech, and endeavored to explain his state to the bystanders. At the end of six hours he recognized the reporter, asked him how he did, inquired whether he did not think him very ill, and expressed surprise that he had survived fifty-five grains of acetate of morphia. At the end of *seven hours* the symptoms were slowly improving; he could struggle successfully against his tendency to sleep; his ideas were clear; and he could see, as he said, all that was passing, as if through a cloud. At eight o'clock the next morning, sixteen hours after taking the poison, the report was that he had vomited repeatedly during the night, and still continued to do so. On his forehead there was seen a vesicular eruption, which accounted for the itching of the previous day. He still complained of heaviness of the head, and confusion of intellect. On the following day he was nearly well, and left the hospital on the morrow. He still continued to complain of eructations, having the intense bitter taste of the morphia.\* M. Bonjean regrets that he did not administer a solution of tannin, according to the suggestion of Orfila; and he aduces an experiment to show that the acetate of morphia is completely decomposed by that agent.

4. *Poisoning by Poppy-heads.*—The "Gazette des Hôpitaux" (April 15, 1845) quotes from the "Echo de la Frontière," published at Valenciennes, the following cases. Three children of one of the faubourgs of Cambrai sucked some unripe poppy-heads, and soon after, on going home, fell asleep. In the middle of the night the mother was roused from sleep by the unusual sound of their respiration, which consisted of a short, laborious rale. At the same time, the eyes were found wide open, the countenance pale and haggard, and the body convulsed. A medical man was immediately sent for, who succeeded in saving two of the children. Fruitless efforts were made to introduce an emetic into the stomach of the youngest; deglutition was arrested, the infant foamed at the mouth, and expired four hours after.

5. *Poisoning by Hemlock* (conium maculatum).—The children of one Duncan Gow, a tailor, of Edinburgh, found what they took for parsley, growing under Sir Walter Scott's monument, and took it home to their father, who, having fasted the whole day, greedily ate the vegetables, with a piece of bread. The quantity consumed could not be ascertained, but it probably amounted to several ounces. The history of this case, from the time of the fatal meal, is carefully compiled from the evidence of the several parties who subsequently saw Duncan Gow. The first effect was loss of power in the inferior extremities, unattended by pain. This showed itself soon after the meal. "His gait, which at that time was faltering, afterwards became vacillating—he staggered as one drunk; at length, his limbs refused to support him, and he fell. On being raised, his legs dragged after him; and, lastly, when the arms were lifted, they fell like inert masses, and remained immovable. Perfect paralysis of the inferior extremities were ascertained to exist one hour and a half after the poison was taken, and that of the arms half an hour later." The complete paralysis of the legs was accompanied by amaurosis; the excito-motory functions were also inferred to be paralysed, by the fact that tickling the armpits failed to produce any movement of the upper extremities. He lost the power of deglutition, and made ineffectual efforts to vomit. "There were no convulsions, only slight occasional movements of the left leg; and, lastly, both inferior extremities were slowly drawn upwards when placed over the iron of the stretcher. Three hours after taking the poison, the respiratory movements had ceased; the pupils were fixed. At this time the heart's action was very feeble, and ceased altogether ten minutes afterwards. The intelligence remained perfect nearly

\* Annales d'Hygiène, Jan., 1845. Reporter M. J. Bonjean, de Chambéry

to the last; two hours after taking the poison he still retained the use of his speech, and a quarter of an hour after that still appeared sensible, though he could not articulate. The post-mortem appearances were, an unusual quantity of fluid blood in the vessels of the scalp, and in the sinuses of the brain; slight serous effusion beneath the arachnoid membrane, and into the ventricles; and numerous bloody points in the substance of the brain. The lungs were "throughout intensely engorged with dark-red fluid blood. There were a few small clots of blood in the heart. The blood, throughout the body, was of a dark color and fluid, even in the heart and large vessels. The stomach contained a pulaceous mass, formed of some raw green vegetable resembling parsley. Its contents weighed eleven ounces, and had an acid and slightly spirituous odor. The mucous coat was much congested, especially at its cardiac extremity. Here there were numerous extravasations of dark-red blood, below the epithelium, over a space about the size of the hand." The intestines and other viscera were healthy, but partially congested. On examining the contents of the stomach more minutely, it was found to consist chiefly of fragments of green leaves and leaf-stalks, and on a specimen being submitted to Dr. Christison, he recognized the *lacinia* of the *conium maculatum*, or common hemlock. On bruising some of the leaves in a mortar, with a solution of potash, the peculiar mousy odor of conia was at once evident. The *conium maculatum* was also found growing on the spot from which the leaves had been gathered. Dr. John Hughes Bennet, the reporter of this case, accompanies it by some judicious comments, and shows the striking analogy of the symptoms to those recorded as having followed the drinking of the *Kuvelor* by Socrates; and justly observes, that that analogy is strongly in favor of the opinion of the identity of the poison swallowed by Socrates and the *conium maculatum*.\*

6. *Poisoning by Arsenic*.—The trial of James McKerlie, before the Circuit Court of Justiciary, at Glasgow, in April, 1845, as reported in the "London and Edinburgh Monthly Journal," for June, 1845, comprises some points worthy of notice. Three persons, a father, his son, and a shopman, partook of the same dish (kail), and some was also given to a dog. They were all affected more or less severely, but, after frequent vomiting, recovered. The occurrence of vomiting in the dog first excited suspicion as to the cause of the illness being in the food. Dr. Paton, who was first called in, stated that he had tasted the broth, and that it had an acrid, pungent taste, and a powerful effect upon the teeth, from which he concluded that there was arsenic in it. This statement, so much at variance with the experiments of Dr. Christison, deserves to be put on record, though it must be admitted to be quite possible that the acrid, pungent taste might be due to some other substance contained in the broth, and used as seasoning. Arsenic was found in the broth by all the approved tests, and the results communicated in an excellently worded report, drawn up by Drs. Penny and King, of the Andersonian University. James McKerlie was proved to have purchased arsenic, under the usual pretence of poisoning rats, and to have been in the kitchen during the cooking of the broth. These, with other suspicious circumstances, induced the jury to find a verdict of guilty, and the prisoner was sentenced to transportation for life.

An interesting and instructive case of triple poisoning by arsenic is recorded by Dr. Bayard.† The author's principal object in publishing these cases was to show the care which ought to be taken in medico-legal researches, and the little attention which ought to be paid to mere popular rumors. All the circumstances of the case, and the opinion of the medical men, who saw the deceased during life, were strongly opposed to the idea of poisoning; and it was not till the fifth member of the same family died in the short space of two years, that any suspicions of foul play were expressed. The bodies were then ordered to be examined, when, in three out of five, arsenic was discovered.

The following case is reported by Dr. Parker of Maldon.—A fine healthy child, twenty months old, eat by mistake a quantity of a paste, consisting of honey, flour, and arsenic, kept for the purpose of destroying mice. The child was seen to swallow the poison by the mother, who instantly forced a considerable quantity of it from the mouth with her finger, and administered a dose of ipecacuanha wine, which operated freely. Dr. Parker was called a few minutes after, who encouraged the vomiting by copious draughts of milk. This was at 4 p.m. At 6 p.m. the report was as follows: the child has vomited much; has had two natural motions without pain; is now sleep-

\* Edin. Med. and Surg. Journal, July 1, 1845, p. 169.

† Annales d'Hygiène, Janvier, 1845, p. 638.

ing calmly; countenance entirely natural; pulse 130; respiration a little hurried. His mother states that this is his ordinary hour for repose, and that he is sleeping in his usual manner. 8 p.m. the same; half-past nine p.m. still sleeping, but restless; skin hot; pulse 140; no expression of pain. Soon after 10 o'clock he got worse; the extremities and face became cold; lips livid; eyes sunk; the pupils fixed and rather dilated; pulse scarcely perceptible; respiration feeble, accompanied with sighing. After lying about half an hour in this condition, he expired without a struggle at half-past 11, nearly 8 hours subsequently to the accident. The body was examined 12 hours after death, when "the stomach and intestines exhibited little deviation from healthy appearance. The former viscus contained a small quantity of mucus, and a few particles of paste. The villous surface manifested no signs of inflammation. Two or three vascular patches were detected, so faint, indeed, that they would probably have escaped notice, had not the interior of the stomach been an object of special investigation. There was no opportunity of examining the other viscera." The circumstances of the little patient sleeping naturally two hours after taking a deadly poison, and continuing asleep for more than three hours and a half, exhibiting no symptom of poisoning by arsenic more characteristic than a pulse of 140, and a slight degree of fever; and of its dying with symptoms of collapse in less than 8 hours from taking the poison, are well worthy of note, and make up together one of the most striking examples of a very peculiar class of cases.\*

7. *Poisoning by Mercury. Protochloride of tin as an antidote for corrosive sublimate.*—M. Poumet, of Orleans,† has examined the value of protochloride of tin as an antidote for corrosive sublimate, by means of a series of well-conducted experiments, and he arrives at the following conclusions:—1. Dogs which are made to take a solution of corrosive sublimate containing 15½ grains, 7½ grains, or 1½ grains of the poison, die, even though allowed to vomit freely. 2. Dogs which are made to take 31 grains of the protochloride of tin in solution recover readily and promptly, even when they are prevented from vomiting. 3. The black precipitate, and the supernatant liquid, the results of the mixture of the salt of tin with a solution of corrosive sublimate, are not poisonous. 4. A solution of the salt of tin, of twice the strength of the solution of corrosive sublimate, when introduced into the stomach, directly after swallowing the poison, neutralizes, instantly and completely, the deleterious property of the salt of mercury, even when the animal is prevented from vomiting. 5. This favorable result takes place, in one fourth of the cases, when the antidote, instead of being administered immediately, is given a quarter of an hour after the poison. 6. The protochloride of tin, then, is an antidote to corrosive sublimate. 7. Would it not be exactly the same with the sulphate and nitrate of mercury? M. Poumet states, that he has reason to answer this question in the affirmative.

[In the case of the corrosive poisons, the best antidotes are those which can be most promptly obtained, and as it is much more probable that white of eggs would be at hand in a case of poisoning by corrosive sublimate, than a comparatively rarer agent, the protochloride of tin, it is not likely that this latter substance, though doubtless an antidote to corrosive sublimate, will ever come into use.]

8. *Poisoning by Corrosive Sublimate externally applied.*—John Welch, a druggist, was tried at Worcester, June 18, before Lord Denman, for causing the deaths of two children by a lotion containing corrosive sublimate applied externally for the cure of ringworm. The lotion was applied to the heads of three children. It caused pain, followed by violent inflammation, vesication of the forehead, uneasiness and fever, pain in the head and bowels, and sickness. These symptoms were followed in one of the fatal cases by profuse salivation, ending in sloughing of the gums and tongue. The jury returned a verdict of not guilty, and thus held out an encouragement, scarcely required, to unlicensed persons to exercise an art which no previous training has prepared them to understand. No evidence was given as to the death of the other child.‡ The nature of the poison was strongly inferred, but was not proved by analysis.

A case of poisoning by corrosive sublimate, mixed by mistake with sulphate of pot-

\* Provincial Medical and Surgical Journal, July 16, 1845.

† Recherches et expérimentations sur le proto-chlorure d'étain considéré comme anti-poison de deschlorure de mercure, par J. G. Poumet (d'Orléans). Annales d'Hygiène, Juillet et Octobre, 1845, pp. 331 and 408.

‡ Month. Journal of Med. Science, Sept., 1845: also Med. Gaz., Aug. 1, 1845, p. 606.

ass (Sel Duobus), is related by M. Jean-Baptiste Chevallier. The poisonous mixture was administered by a quack midwife, who was tried before the Tribunal de Première Instance de la Seine, for the illegal exercise of pharmacy and the profession of medicine, and involuntary homicide by imprudence. The nature of the mixture was ascertained by chemical analysis.\*

9. *Poisoning by Copper.*—The existence of a copper-colic in men who work with metal is a subject upon which some doubt has been expressed, its symptoms being attributed to the lead with which it is combined. M. Blondet, in a memoir read before the Academy of Sciences, asserts the reality of the poisonous effects attributed to copper, and describes the colic which it occasions as being subject to remission, characterized by severe pain, increased by pressure, and accompanied by headache, nausea, and diarrhoea, or constipation. The vomited matters are bilious, and the first alvine evacuations are often of a green color. Fever is a somewhat rare accompaniment. In men who are not cleanly, the hair is green; the perspiration of the same color; and the teeth are covered by a grey coating of sulphuret of copper. The prophylactic measures proposed by M. Blondet are the habitual employment of an albuminous drink, and saline purgatives when the bowels are costive. Cleanliness, though not mentioned, is an obvious item of the prophylaxis.†

10. *Poisoning by Zinc.*—M. Blondet, in a memoir presented to the French Academy of Science, directs attention to the symptoms brought on by the fumes arising from zinc used in bronze and brass founding. Heavy pain in the stomach, nausea, loss of appetite, cough, oppression, fixed pain in the head and a sense of tightness across the temples, noise in the ears, which continues during the night, general debility, tetanic stiffness and soreness of the limbs, rigors, trembling of some hours' continuance, nightmare, a sensation of swelling, cold sweats preceded by flushes of heat. These symptoms disappear on awaking from sleep, but lassitude and soreness still continue.‡

11. *Poisoning by Sulphuric Acid.*—A case of poisoning by sulphuric acid is reported by MM. Chevalier and Ollivier, which is chiefly interesting from the circumstance of the nature of the poison having been ascertained by an analysis of the clothes, after an examination of some of the vomited matters and of the contents of the stomach had failed—a failure attributed to the free discharge of the poison by vomiting. The post-mortem appearances were very characteristic, and such as to render unnecessary the application of the tests for prussic acid, arsenic, and corrosive sublimate, which the reporters thought it necessary to use.§

12. *Poisoning by Savin.*—An extremely interesting and instructive case of poisoning by this substance, administered to a pregnant female, with a fatal effect both to mother and child, occurred in the month of May last, and was the subject of examination in the coroner's court before Mr. Wakley. The poison was identified by the aid of the microscope, the green substance found in the stomach being compared with a portion of powdered savin. Mr. C. Johnson, lecturer on botany at Guy's hospital, stated that on examining a portion of the powder under the microscope, he was enabled to determine it to be the part of a leaf of a plant of the pine genus, by the peculiar arrangement of the glandular apparatus of the leaf, and further, that it was savin by the exact correspondence of the glandular apparatus in question with that of a portion of savin powder examined at the same time. There was the same correspondence between the shape of the extremity of the leaf of the substance found in the stomach and a fragment of savin. The shape of the leaf was widely different from that of the yew (*Taxus baccata*), a poisonous plant belonging to the order coniferæ. The contents of the stomach were further identified by their odor. Mr. Alfred Taylor calculated the quantity of savin contained in the stomach at from twenty-five to thirty grains. The deceased had vomited freely, and brought up a large quantity of green matter which the medical attendant took for bile. The absence of other poisons, whether mineral or vegetable, was ascertained by Mr. Taylor. The jury returned a verdict "that the deceased, Caroline Hillman, died from the effects of a certain poison called savin, but whether taken for the purpose of destroying life, or procuring abortion, there is not sufficient evidence to show, and that her male infant died a natural death."||

\* Annales d'Hygiène, Janvier, 1845.

† Gaz. Méd. de Paris, Février, 1845, p. 136.

‡ Med. Gaz., Aug. 8, 1845, p. 646.

§ Gaz. Méd. de Paris, Février 22, 1845.

|| Annales d'Hygiène, Janvier, 1845, p. 179.



13. *Poisoning by Sulphate of Quinine.*—M. Desiderio communicated to the February sitting of the Royal Academy of Medicine, the results which he had obtained relatively to the action of this substance, by means of numerous experiments on animals as well as by observations at the bed-side. The effects upon animals are in every respect similar to those observed in the human subject; namely, drowsiness, an indisposition to motion, unsteadiness of gait, dimness of vision, and drooping of the eyelids. An alcoholic solution of morphia produces analogous effects. Hence, when given with sulphate of quinine it increases its action. On the contrary, laurel water counteracts to a certain extent its effects, and may be considered as an antidote. Bleeding is still more efficacious, and digitalis also has appeared to be useful.\*

14. *Poisoning by bad Meat acting on vessels of Copper.*—On the 15th April of this year the patients, sisters of charity, and officials of the Beaujon Hospital, were suddenly, and nearly simultaneously, seized a few hours after dinner with violent colic, frequent and copious purging of bloody mucus, and painful tenesmus. In many instances the symptoms were extremely severe, and they were obviously due to poison. Soups, vegetables, and meat, and the evacuations of the patients, were accordingly submitted to chemical examination, and were found to contain copper. The mere discovery of this poison, however, was not sufficient; for it appeared that many patients who had partaken of the same food escaped, and the meat was forthwith suspected. One of the sisters, the superintendent of the kitchen, recollected that two kinds of meat had been used—a shoulder and a leg of beef—and that those only who had partaken of the latter suffered. Some of the leg still remained; it was cooked, and again eaten; the same symptoms ensued, and the sister nearly lost her life. Nothing of the kind occurred with the shoulder. It was, therefore, evident that the leg was unsound. It appears that on the day of the accident, the contractor had sent to the hospital a quantity of meat, the cellular tissue of which was infected, and evidently diseased; it was accordingly rejected by the superintendent. The contractor immediately killed an ox, which was reported to have just come off a long journey, and consequently in that febrile state which the butchers technically call *heated*; and the portion of it brought to the hospital still reeking, was also rejected. He then appealed to the central administration, which, without previous inquiry, ordered it to be accepted. This was the cause of the symptoms, the presence of copper being thus explained: *Meat of this nature generates a quantity of ammonia, which, in spite of the tinning, attacks the copper; hence the formation of ammonuret of copper, which passes into the broth, and is superadded to the deleterious principle of the meat itself.*†

15. *Mode of operation of Poisons.*—An interesting question connected with the *modus operandi* of poisons has been lately submitted to experiment by M. Andouard of Beziers, viz., Do poisons, and soluble salts, taken by the mother, reach the body of the fœtus? The following are the conclusions to which we have arrived:—1. Poisons and soluble salts reach the fœtus, provided that the death of the mother does not follow instantly on the swallowing of the substance. In this last case, the placenta alone is impregnated with that substance, or, if the fœtus receive it, the quantity is so small as not to be appreciable by analysis. 2. If we have reason to suppose that a pregnant woman has died poisoned, we should not neglect to search for the poison in the placenta, the liquor amnii, and the fœtus.‡

M. Orfila, in an essay in the “*Annales d'Hygiène*,”§ devotes himself to the refutation of two errors against which he thinks it necessary to caution those engaged in medico-legal inquiries in cases of poisoning. The first is that of requiring distinct proof that the quantity of a poison discovered in the body by analysis is sufficient to destroy life; the second is that we operate more surely if we analyse a small portion of an organ (the liver for instance), than if we employ a larger quantity. It would seem scarcely necessary to occupy upwards of twenty pages in the refutation of two errors so patent as these; but as it has appeared otherwise to this distinguished authority, the subject is here briefly referred to. It must be obvious that if in every case we were to insist on the discovery in the contents of the stomach or the organs of the body of a quantity of poison sufficient to destroy life, many criminals, now justly condemned, would be allowed to escape; and that, on the other hand, if we were to prefer

\* Archiv. gén. de Méd., Mars, 1845, p. 373.

† Annales de Thérapeutique, Mai, 1845; and abstract in the London and Edinburgh Monthly Journal, July, 1845.

‡ Acad. Royale des Sciences de Paris, Séance du 24 Mars.

§ April, 1845, p. 347.

the use of a small portion of the contents of the stomach, or a small fragment of the liver, to a larger quantity of either, we might fail to discover a poison which nevertheless existed in sufficient quantity to be identified by operations on a larger scale. The only case in which operations on a larger scale are to be deprecated is where the reagents we employ are in such quantity as, though apparently pure, to furnish the very poison of which we are in search.

16. *On Copper and Lead naturally contained in the Human Body.*—M. Devergie, in a paper which forms a rejoinder to a memoir read at the academy, by MM. Danger and Flandin, in which they call in question the assertion of MM. Hervy and Devergie, that the body naturally contains a certain proportion of copper and lead, confirms his original statement by the results of a new series of experiments, performed in conjunction with M. Boutigny. The following are the conclusions at which he arrives. 1. The stomach, the intestines, and all the organs of the economy furnish, on analysis, traces of copper and lead. 2. The proportion in which these metals are found increases with age. It is small in the new-born infant; it is much more considerable in the adult. 3. A chronic malady, during which the food is greatly diminished, appears singularly to lessen the quantity of copper and lead in the organs of the body. 4. This difference confirms the natural supposition that the source of these metals is the meat and vegetables used as food. 5. In all cases the proportion of copper is greater than that of lead. The theory that the copper and lead naturally contained in the human body is supplied by the food is strongly supported by the fact that copper has been found in wheat, barley, rye, oats, rice, tea, coffee, sugar, sorrel, chicory, chocolate, gelatin, the flesh of the ox, &c.; and that it gives its green color to sorrel, spinach, and gherkins. The use of copper vessels in cookery will also account for the introduction of the metal into the body.\*

17. *Action of Charcoal on solutions of Metallic Salts.*—M. Chevallier† has instituted a series of experiments on this subject, to which his attention was directed in consequence of having to examine wine largely impregnated with lead, but which, after being decolorized by animal charcoal, was found to have lost all trace of that metal. The author in the present communication limits himself to the salts of lead, in respect to which he establishes the following facts :—That vegetable charcoal, unwashed animal charcoal, and animal charcoal washed and purified from carbonates and phosphates, not only, as is well known, form with coloring matters, insoluble precipitates, but unite with metallic oxides, so as to separate them from the acids with which they are combined. Charcoal has this effect on aqueous, acetous, alcoholic, and vinous solutions of the salts of lead, though vegetable acts more feebly than animal charcoal. This property which charcoal has of separating the metallic oxides from their solutions M. Chevallier thinks has an important medico-legal application; for in many cases medico-legal authorities prescribe the use of animal charcoal as a decolorizing agent of metallic solutions. M. Chevallier's experiments were commenced in 1843, in ignorance of the previous researches of Graham.

### § II.—Unsoundness of Mind.

18. *Plea of Insanity in Criminal Cases.*—At the Cumberland Midsummer Assizes, Ann Shepherd, aged 34, a female in good circumstances, was indicted for stealing a fur boa, the property of Martha Barwise, of Whitehaven, and was acquitted on the ground of insanity, from suppression of the menses. When charged with the theft she did not deny the possession of the boa, and at once gave it up, speaking incoherently of its having been brought to her by "the prisoner," or by "the boy." It appeared from the evidence of her mother, and several other witnesses, that since the age of 18 she had been subject to amenorrhœa, which "made her act oddly at times, and made her a little wandering." "She was flighty, and did ridiculous things," exhibiting delusions, believing things to have happened which had not occurred, wandering from home, being unusually talkative, and creating by her strange behavior the suspicions and anxiety of her relations: When confined in the Bridewell she was flighty, rambling, and talkative; did not appear like any other person; her demeanor was very strange, so that one of the two magistrates who took her examination pronounced her mad. No evidence was adduced of the menses having been suppressed at the time of the theft, but

\* *Annales d'Hygiène, publique, Janvier, 1845, p. 142.*

† *Ib.*, p. 135.

the jury, on taking all the circumstances of the case into the account, brought in a verdict of *not guilty*. A full account of the case will be found in the "Monthly Journal of Medical Science" (No. 56, August, 1845).

A second case, in which the prisoner was acquitted on the ground of insanity, is briefly noticed in the same journal (Sept., 1845). It is that of Henry Louis Goule for the murder of his wife, whom he suspected of undue intimacy with several gentlemen. The evidence which led to the verdict of "not guilty, on the ground of insanity," consisted in showing that the prisoner some time previously had received a severe wound on the head; that before it was perfectly healed, he wandered away, and remained for some days, when he came back in a very excited state; that he had since that time been wild in his eye and eccentric in his manner; had had a fit; and within a fortnight of the fatal act had complained very much of his head. This case was tried on the Northern Circuit.

An abstract of a report of the trial of Abner Rogers, jun., indicted for the murder of Charles Lincoln, jun., before the Supreme Judicial Court of Massachusetts, holden at Boston, on Tuesday, Jan. 30, 1844, by George Tyler Bigelow and George Bemis, Esqs., counsel for the defendant, will be found in Dr. Houston's "Medical Examiner," February, 1845. [The Chief Justice, in the course of his charge, made some remarks upon the nature and value of medical evidence, contrasting very favorably with the charge of the judge in the case of Gibson, reported in the "Abstract" for the first half of this year; and the event justified the verdict as completely as in the case of Gibson it proved its injustice.]

The reader is also referred, for illustrations of certain questions connected with unsoundness of mind, to some portions of the evidence given before a commission *de lunatico inquirendo*, in the case of Mr. Thomas Carpenter.\*

### § III.—Sudden and Violent Death.\*

19. *Introduction of Air into the Veins*.—M. Turchetti, in a memoir read at the Scientific Congress at Milan, in 1844, insists on the fatal consequences of this accident, and on the necessity in medico-legal inquiries of bearing in mind the possibility that death attributed to wounds of the large venous trunks may be really due, not to the wound itself, but to the introduction of air consequent upon it.†

20. *Perforation of the Stomach*.—Mr. Edw. Young of Belper has reported the following case of perforation of the stomach. A young woman, aged 19, who had previously enjoyed tolerable health, though occasionally the subject of dyspepsia, and who had followed her usual employment in the factory, until the day before her illness, was suddenly seized, after a long walk, with violent pain in the abdomen, followed by symptoms of acute peritonitis. She experienced the most marked relief from the abstraction of eight ounces of blood from the arm. She was seized on the afternoon of one day, and died at nine o'clock on the morning of the next. On examining the stomach, a circular aperture was discovered, with *hard and cartilaginous* edges (large enough to admit the stem of a tobacco-pipe), above the pyloric orifice. With the exception of this thickened and indurated portion, which scarcely exceeded an inch in circumference, the organ was healthy. There was extensive inflammation of the peritoneum, the contents of the stomach were effused into the cavity, mixed with an abundance of serum, shreds of lymph, and a considerable quantity of pus.‡

Mr. William Collyers, surgeon of Kenton, has reported in the same journal a case of ulcerated stomach, causing death by being suddenly detached from its adhesion to the peritoneal lining of the abdomen. The patient, a healthy, robust, and stout female, aged 21, was suddenly seized, soon after a hearty breakfast, with very severe pain in her left side; she shrieked violently, became faint, fell down in the street, and expired after suffering intense agony for three hours. The opening was at the anterior part of the lesser curvature of the stomach.‡

21. *Death from Drowning*.—A woman in full health was observed intoxicated on the banks of the Schuylkill, about one hour before the body was discovered in very shallow water. She had not, therefore, remained long under water. The body was examined about sixteen hours after death, the face was swelled, and of a mottled pur-

\* Dublin Med. Press, July 16, 1845.

† Prov. Med. and Surg. Journal, July 23, 1845.

‡ Encyc. des Sciences Méd., Avril, 1845, p. 948.

§ Ibid., Aug. 27, 1845.

ple. The arms and thighs presented patches of discoloration; and a small quantity of whitish froth issued from the mouth, the amount of which was not increased by pressure on the chest, although a small quantity of watery fluid escaped when the body was turned over. On opening the chest, numerous old pleuritic adhesions were found, on the removal of which, and the consequent compression of the lungs, a discharge of watery froth took place from the mouth. All the parts of the pulmonary tissue, especially their posterior portions, were engorged with blood, and were much heavier, and of a darker red color than in the normal state. The tracheal and bronchial tubes contained the same kind of watery froth, or frothy mucus, as that which issued from the mouth. The liver was large, engorged, and of a bright red color. The right cavities of the heart and the coronary veins were filled with dark fluid blood. The left cavities were empty.\*

22. *Death by Strangulation*.—Dr. E. Duchesne has written an elaborate memoir on death by strangulation, in which he has brought together a large number of cases of incomplete suspension.† Of these cases 15 are from Marc, 16 from separate publications and periodicals, published in the last fifteen years, and 27 from the author's own experience or that of his colleagues; making a total of 58 cases. The following are the conclusions which he draws from these cases. 1. Suicide by strangulation, with incomplete suspension, is an ascertained fact, established by numerous authentic observations. 2. Suicide by strangulation ought to be admitted (as possible?) whatever may be the position in which the body is found, and even though it should rest exactly on the two feet. 3. The sensations experienced by those who hang themselves are such, that they do not wish, or are not able, to arrest the execution of their fatal projects.

The most common position in which suicides by strangulation are found is with the toes, heel, or even the sole of the foot touching the ground. This happens in about half the cases. In more than half the cases the instrument of death is a rope, or a cord made out of their sheets or shirts. Handkerchiefs and cravats are much less frequently employed.

The following are the ages in 52 out of the 58 cases: four from 12 to 20; five from 20 to 30; nine from 30 to 40; fourteen from 40 to 50; six from 50 to 60; five from 60 to 70; five from 70 to 80; four from 80 to 85. The youngest was 12 years old, oldest 83. The greatest number occurred from 40 to 50, both in males and females.

#### § IV.—Wounds.

23. *Blood-stains*.—M. Orfila‡ has instituted a series of experiments on a new mode of distinguishing stains of blood on linen and other fabrics from stains produced by other substances. The motives which led him to institute this inquiry will be understood from the following statement. About six years ago M. Persoz, of Strasburg, stated that he had used hypochlorous acid§ to distinguish blood-stains from others produced by wine, and that he had found that the acid in question destroyed all stains except those produced by blood and rust. Soon after this fact was communicated to M. Orfila, he had an opportunity of applying it in a medico-legal case, when the statement of M. Persoz was to a certain extent borne out. Still more recently MM. Magonty and Loust, of Bourdeaux, wrote to M. Orfila to request that he would inform them of the best method to employ to ascertain the nature of certain stains found on the clothes of an accused party, which they were unable to satisfy themselves by the ordinary methods of investigation were caused by blood. Orfila, in reply, advised the employment of hypochlorous acid. MM. Magonty and Loust immediately proceeded to perform a series of comparative experiments, with the stain in question and recent blood stains, which resulted in partially confirming the statements of M. Persoz, and in rendering it probable that the stains on the clothes of the accused had been produced by blood. M. Orfila determined to submit the statements of M. Persoz to the test of a careful and minute experimental inquiry. He accordingly performed a series of thirty-nine experiments on the action of hypochlorous acid on blood-stains, on spots produced

\* Dunglison's Clinical Lecture, Med. Exam., New Series, Nov. 3, 1845.

† Annales d'Hygiène, Juillet and Octobre, 1845, pp. 141, 346.

‡ Ibid.

§ Hypochlorous acid may be obtained by agitating a solution of deutoxide of mercury in chlorine gas; the gas is rapidly absorbed; the oxy-chloride of mercury is deposited, and a liquid compound of oxygen and chlorine remains.

by various coloring matters, and on the action of water on stains of blood. The following is an abstract of the conclusions which he draws from these experiments. 1. Of all the means hitherto proposed for distinguishing stains of blood, that which consists in treating them by water, and subsequently testing the solution, as recommended by Orfila in 1826, is without doubt the best. M. Persoz is evidently mistaken when he supposes that blood-stains found on different tissues often lose the property of dissolving in water, and cannot therefore be detected by its aid, for M. Orfila found by a large number of experiments that in almost every case spots even of the longest standing, whether on clean linen, or on linen covered with grease, or upon iron, always yielded to water a sufficiency of their coloring matter to prove them to be blood; on the other hand, he found, from numerous experiments, that no coloring matter whatever applied to linen is acted on by water in the same way that blood-stains are. 2. Hypochlorous acid is far from possessing the advantages attributed to it by M. Persoz; for in his (M. Orfila's) experiments most of the blood-stains, whether thick or slight, recent or old, on linen or on iron, disappear nearly or entirely on being immersed in the acid for some time; that some of those spots which do not entirely disappear, so far from changing to a reddish-brown color, only leave a greyish stain behind them. It is true, however, that some of these spots, though they disappear in the greater part of their extent, preserve in their centre a brownish-red color. It is true that to this extent M. Persoz's announcement holds good, that if the stain be exposed to the action of the acid for a few seconds, or one or two minutes only, the spots remain and become brown, even though they were dry and of long standing, but on the other hand, stains made with a mixture of fat and orchanet, or with charcoal and fat, or with madder, poppy, chelidonium majus, &c., &c., are acted on by the hypochlorous acid in very nearly the same manner as stains of blood, and therefore this acid cannot be a certain test for colored stains, even when the immersion has been but of short duration. 3. But though this acid is in itself insufficient to determine positively that a stain has been made by blood, it may be employed with some advantage as an accessory, provided it be only left in contact with the stain for one or two minutes at most; in fact various coloring matters take the same shade with this acid that blood does, but some of them are altogether discharged by it in less than two minutes, while so short time is insufficient for blood-stains to be discharged by the same agency. 4. The hypochlorous acid is perfectly inefficacious for distinguishing a thick deposit of blood on linen or iron, from iron-moulds, or a mixture of colcothar (sesquioxide of iron) and grease, because they all remain even after a prolonged action of the acid; but they may be distinguished by treating the spots with protochloride of tin acidulated with hydrochloric acid, which the thicker stains of blood resist, while the other stains do not disappear till the end of some hours. 5. The action of hypochlorous acid upon stains of blood thrown on the substance by a jet, or by immersion of the linen in it, differs sensibly from that which it exercises upon spots which we may call *secondary*, that is, those which are made by contact with some other fabric on which blood has spilt; the latter resist the decolorizing action of the acid much more feebly than the former.

#### § V.—Identity.

24. *Personal Identity*.—Dr. Henri Bayard has published three cases of disinterment for the purpose of identification. The only remaining parts of the body were the bones, and the attempt at identification was successful in one only of the three cases. The principal point of interest in the first case was the coincidence of the calculations, based on the measurement of the long bones with the averages ascertained by Orfila. The long bones of the upper and lower extremities were measured, and the stature calculated from their length was 1 metre 54 centimetres. It was rendered in the highest degree probable by the circumstantial evidence, that the skeleton belonged to one Adnet, who had disappeared two years before. His wife stated that her husband was as nearly as possible of her own height, and that he could wear her shoes. She measured 1 metre 52 centimetres. A certificate under the hand of M. Fournier, the mayor of the commune in which Adnet resided, gave as his height, determined for the purposes of the conscription, 1 metre 53 centimetres. So that the calculated stature (1 metre 54 centimetres) corresponded very closely with the ascertained stature. This correspondence must be regarded as a happy coincidence, for Orfila's own measurements give for the same length of long bone a considerable range of stature, and

it is obvious that Dr. Bayard might have met with an extreme case instead of this very fortunate average.\*

25. *Doubtful Sex.*—Dr. Otto, of Copenhagen, gives a minute description of a male, who, up to his 26th year, was mistaken for a female, and educated as such. He was a hypospadian, with cleft scrotum, containing testicles, and a bland sheath-like canal, an inch in length, beneath the urethra, terminating between the bladder and rectum. He had had no periodical discharge of blood, but was subject to erections and emissions. The form was much more that of a man than a woman.†

#### § VI.—*Delivery.*

26. *Delivery during Sleep.*—M. Schultze, of Spandow, was called, on the 25th of May, 1844, to a woman pregnant for the fourth time, at full term, and whom he found in so profound a sleep that he could not rouse her, either by shaking her, or by the vapors of ammonia, ether, &c., applied to the nostrils. On the third day of this unnatural sleep, the female was delivered, without awakening, of a male child, at full term, alive and well. On his visit of the morrow, M. Schultze found that his patient had been awake for a short time; she had recovered of herself, and as she had no recollection of what had happened, she appeared much surprised to find herself safely delivered.‡

27. *Rapid Delivery without Previous Pains.*—Mr. J. B. Prowse, in a letter to the "Lancet," relates the following case, as having an obvious bearing on the question of infanticide. "When a pupil, I was engaged by a poor woman to attend her during her accouchement; she was a native of Ireland, and a remarkably fine and well formed person. She had already borne two children. On the day of her delivery I was requested to call on her, for she thought her confinement was near at hand. Her attendants said she was in no pain, but that she appeared uneasy. I waited on her, and found her on the bed, smiling, and expressing a hope that she had not summoned me unnecessarily; but that as she never suffered much in labor, I would excuse her if she was wrong. On examination I was surprised to find the head of the child in the upper part of the vagina, and was puzzled to account for there having been no pains to lead to a suspicion of the real nature of the case. No sooner was my hand withdrawn, and my back turned to speak to the attendants, than there occurred one single effort of the uterus, and the child was in the world."§

#### § VII.—*Medical Evidence.*

28. *Coroner's Court.*—The "Provincial Medical and Surgical Journal"|| copies from the "Exeter and Plymouth Gazette" a case of poisoning, with a letter on the subject, addressed to the editor, by Mr. William Trevor, of Dalverton. The statements contained in Mr. Trevor's letter are of a nature to require that the widest publicity should be given to them, and although several weeks have elapsed since that letter was written, it may not be amiss to make a short extract from it. "The facts of the case are briefly these. An unmarried young woman, living in service, is taken suddenly and violently ill, and it is immediately suspected that she has taken poison, which, however, she does not acknowledge. Medical assistance is called in; and upon the arrival of the surgeon, to him she for the first time confesses that she has taken poison. The existence of pregnancy is discovered. In the discharge of what he conceived to be his duty, the surgeon informs her that she is in imminent danger, and she then makes certain statements. After four days of severe suffering, during which this same surgeon is in frequent attendance, this unhappy creature dies; and at the inquiry which subsequently takes place as to the cause of death, this surgeon is not only not called upon to give evidence, but is absolutely the only person who was about the deceased who was not permitted to do so. And why? Because if he was examined he would be entitled to a fee of one guinea!" After this important omission, it will create no surprise to state that the inquiry was conducted in a very hasty and slovenly manner, and that, without inquiring into the state of the mind of the deceased, the jury returned a verdict of *felo de se*. It is to be feared that this is by no means a solitary example of the interference of a short-sighted and most culpable economy with the duties of the coroner and his court.

\* Annales d'Hygiène, April, 1845, p. 379.

† Medicinische Zeitung.

‡ Zeitschrift für die gesammte Med., Feb., 1845, p. 237.

§ Lancet, July 13, 1845.

|| July 9, 1845.

## VII.

# REPORT ON THE PROGRESS OF MATERIA MEDICA AND PHARMACY.

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### § I.—Pharmacy.

1. *On the Distilled Waters of our Pharmacopæias.*—By Robert Warrington. The formula given for the preparation of distilled waters in the London Pharmacopœia of 1836, is as follows: To a specified quantity of material, whether it be essential oil, flowers, herbs, bark or berries, let two gallons of water and seven ounces of proof spirit, having a specific gravity of 0.920, be added, and submit the mixture to the process of distillation until one gallon shall have passed over. Presuming that the entire amount of spirit employed passes over in this operation, the resulting product will contain a quantity that will be equivalent to about  $4\frac{1}{2}$  ounces of rectified spirit of sp. gr. 0.838.

The Edinburgh form has rather less spirit to the proportion of the materials; two gallons of water and three ounces of rectified spirit are so employed, and a gallon distilled.

The Dublin formula differs from the foregoing, in ordering half an ounce of rectified spirit to be added to each pound of the water after distillation, or in the ratio of five ounces to the gallon.

In the course of our investigations some years since, Mr. Warrington found that when a very small quantity of alcohol was added to distilled water, and the mixture kept exposed to the air for a length of time, the containing vessel being carefully covered with paper to exclude the dust, it became gradually converted into acetic acid, and, by analogy, he was led to believe that the same effect would take place in these distilled waters; the following experiments were therefore put in operation to test the accuracy of these ideas.

In the distillation of essential oils, it is well known that the water which passes over is opalescent, from its being highly charged with the oil, and that when thus impregnated, it will keep perfectly sound for a great length of time. Distilled waters were prepared from various of the essential oils, without the addition of any spirit, and these were taken as the base of the following experiments:

Equal portions of the waters obtained from the oils of dill, caraway, pimento, spearmint and cinnamon, were taken, and to one half the proportion of spirit ordered by the London College was added, the other half remaining in its original state; these were all loosely corked, marked, and placed aside. After remaining six months they were examined, when the spearmint and caraway waters, with the spirit, were found to be distinctly acid, reddening litmus paper, and causing an effervescence with carbonated alkalies; all the others remained perfectly sound. They were again examined after a lapse of twelve months; the acidity had increased in the previous cases, while the same waters, without the spirit, remained perfectly unchanged and evinced no signs of acidity. On examination after another twelve months, they did not appear to have undergone any further alteration.

Another point in favor of these distilled waters keeping, was their having been pre-

pared from their respective essential oils, and not from the herb, seed, or bark. It is stated that these waters are liable to become mucilaginous and sour when long kept, and that the small quantity of spirit is added to prevent this; from the foregoing experiments, however, it will be evidently seen to produce a directly contrary effect, and the formulæ of the Edinburgh and Dublin Pharmacopœias will be equally in error on this point.

It is curious that of the European Pharmacopœias, to which he had access, not one labors under this error, their instructions being simply to distil the materials with water.

On searching back through former editions of the London Pharmacopœia, to ascertain, if possible, whether the formulæ had always been the same, and if not, when this erroneous alteration had been effected, he found that, in the Pharmacopœia of 1624, two classes of distilled waters are specified, entitled simple, and compound or spirituous; the former made without the addition of any spirit, either in the process or afterwards, the latter, similar to the preparations entitled spirits of the present day; after this date, the error of adding small portions of spirit seems to have originated, and to have been regularly copied, with very little deviation, from edition to edition, down to the year 1836, the general directions being to distil a certain quantity of the water from a given weight of material, and then to add five ounces of proof spirit to each gallon, *that it may be preserved*, or rather, in reality, in many cases, to spoil it. In the edition of 1836, the proportion of spirit was increased to the formula that has been already given, and this was also the form prescribed in some of the various dispensatories, about the middle of the eighteenth century.

On examining into the quantity of acid generated in the foregoing experiments, he found that half a pound of the caraway water required four grains of dry carbonate of soda to effect perfect neutralization, which is equivalent to 4.45 grains of real acetic acid. This acid was also isolated by distillation, and its identity proved by various tests.

We now pass on to the extemporaneous preparation of flavored waters from their respective essential oils. The general formula given in the Pharmacopœia of 1836, in which it is introduced for the first time, is to triturate carefully together, one drachm of the essential oil with one drachm of carbonate of magnesia, and afterwards with four pints of distilled water, and then strain. Now, on examining the waters thus prepared, they are all found, without exception, to contain a notable quantity of magnesia, the proportions taken up seeming to vary with the various essential oils employed, all other circumstances remaining the same. Dr. Pereira (in his valuable "Elements of Materia Medica," vol. i., p. 258) thus speaks of these waters: "The magnesia (carbonate of magnesia) effects the minute division of the oil. Moreover, when the oils possess acid properties, as the old oils of pimento, cloves, and cinnamon, it probably serves to saturate them. Prepared in this way, the medicated waters usually contain a minute portion of magnesia in solution: hence, by exposure to the air, they attract carbonic acid, and let fall flocculi of carbonate of magnesia. Moreover, the magnesia unfits them for the preparation of solutions of some of the metallic salts, as bichloride of mercury and nitrate of silver."

The method of examination adopted in the following experiments, was to take a measured volume of the water, say 1000 grains, and evaporate it to dryness at a temperature not exceeding 212°, then to ascertain carefully the weight of the residue, redissolve it in dilute acid, and test the resulting solution. Magnesia in the form of carbonate was invariably found, together, frequently, with resinous matter from the oil; this was more especially the case where oils of considerable age had been employed. By this mode of operating, the results obtained range from 0.50 grains, in the 1000 grain measures of the water, as in peppermint-water, to 1.20 grains in dill and pimento waters; many others were tried, which ranged between these two points. It may perhaps be as well here to mention, that it was observed very soon after the application of the heat in evaporating, that flocculi of carbonate of magnesia invariably separated.

The general opinion has been, that these waters were formed in consequence of the magnesia, as a base, favoring the union of the oil and water, and thus implying some combination of these materials; but Mr. Warrington was led to believe, from various circumstances presenting themselves during these experiments, that this was not in any respect the true cause, and that the carbonate of magnesia acted simply as a mechanical



subdivider of the oil, so that the water acted as a solvent, with greatly increased effect, upon an enormously extended surface of the essential oil, as is the case in distillation, where the cohesive attraction of the molecules being overcome by the influence of heat, the vapors of the oil and water rise together, and are mutually diffused and pass over into the refrigerator or worm to be condensed, and thus solution is to a certain extent effected. Under this impression the same experiments were repeated, substituting for the carbonate of magnesia the kaolin, or porcelain clay of Cornwall, or finely-divided silica, in the form of powdered flints, and with perfect success, the resulting medicated waters being perfectly colorless, transparent, and having a full flavor of their respective oils. On evaporation no residue was obtained, except in a few instances, a small quantity of resinous matter, where, as before mentioned, oils had been used which had been made a long time: this amounted, in the case of pimento-water, to 0.50 grains.

Two questions remain now to be settled, arising out of the foregoing experiments; first, does the magnesia enter into combination with the acid oils existent in some of the essential oils used, as pimento, &c. ? or, secondly, is the oil simply taken into solution by the distilled water? The fact of the carbonate of magnesia separating from the solution, by the application of heat, and remaining always in the state of carbonate on evaporation to dryness, at a temperature of  $212^{\circ}$  Fahr., is a strong argument in opposition to the first of these questions, as the view taken by Dr. Pereira does not seem possible; namely, that the magnesia of the carbonate of magnesia first combines with the acid of the oil, which, as a consequence, implies the evolution of its carbonic acid from its weaker affinity, and that then, by the absorption of carbonic acid from the atmosphere, it is again deposited as carbonate of magnesia, thus making its affinity stronger; the second position being directly contradictory to the first.

On trying a repetition of the same experiments, with the same materials, but omitting the essential oil, and going through precisely the same routine, he obtained from 0.50 to 0.70 grains of carbonate of magnesia by evaporation, as the average results of many trials; so that, from these data, we may fairly conclude no combination of the magnesia and oily acids had taken place, but that it was simply a solution of the earthy carbonate in the distilled water; nevertheless, in many of the experiments, the presence of the different oils evidently affected the solvent power of the water, and thus directly influenced the quantity of carbonate of magnesia taken up; and the resin existent in some of the old oils will account for the occasional increase of weight over this quantity, for it has been shown that this resin is soluble to some extent in water.

There can be no doubt, from the above experiments, that any insoluble substance in a fine state of division will answer the same purpose as the carbonate of magnesia much better, as, for instance, very fine porcelain clay, finely-divided silica, powdered glass, pumice-stone, &c. The use of carbonate of magnesia for the extemporaneous formation of these waters, probably originated with the pharmacist, as being a material generally at hand, and it is well known to have been the substance usually employed for this purpose for a great number of years, and was used by the perfumers to produce the same results, long before its introduction for medicinal preparations.\*

2. *On the Preparation of Medicinal Tinctures.*—By Henry Burton, M.D. The author recommends the interposition of a bag, in which the matters to be exposed to the action of the solvent are to be suspended, and macerated in the spirit without agitation. By this process almost all the medicated tinctures may be prepared of equal strength to the corresponding tinctures made by the old plan, with less risk of incurring a loss of strength by inattention to the degree and repetition of the agitation which is requisite on the old plan, with less labor, and also a less expenditure of spirit. The bag, which is made of linen or a piece of calico, and fastened with a string, should be of the same shape as the vessel in which it is suspended. The substances, reduced to the state of disintegration directed in the London Pharmacopœia, should be allowed to fall into the bag by their own gravity, without the application of pressure, except in the cases of hop, hyoscyamus, and conium, in packing which, especially hop, a moderate degree of pressure will be required to contract their bulks within the requisite limits.

The containing vessel should always rather exceed twice the height of the packed bag, so as to allow of its being raised under cover, and drained above the surface of

\* Proceedings of the Chemical Society.

the tincture. During the process the bag should be raised, and drained under cover, and again lowered as soon as the tincture has entirely ceased to drain. The process is perfected in 2—4 days, when small quantities are operated upon, but is protracted two or three days when large quantities are prepared.\*

3. *On Ethereal Tinctures.*—By Emile Mouchon. The author, in a very elaborate essay on this subject, gives the result of his examination of the ethereal tinctures of aconite, arnica, asafoetida, balsam of tolu, belladonna, buds of fern, castoreum, cantharides, cicuta, digitalis, hyoscyamus, saffron, stramonium, and valerian. In the majority of these cases it appeared that the active principle was not taken up by ether, and that after the ethereal extraction the extract yielded to alcohol was as strong as usual. His conclusions are drawn from an extensive series of observations on the lower animals.

4. *On the Variations in the three British Pharmacopœias.*—In a paper communicated to the Pharmaceutical Society, Mr. Squire has strongly insisted on the advantages of a national pharmacopœia. In the following remarks on the subject of this article the order of arrangement of the London Pharmacopœia is adopted.

*Acidum Aceticum.*—This name is applied in the London Pharmacopœia to an acid consisting of 30·8 parts of anhydrous acetic acid, and 69·2 parts of water. In the Edinburgh Pharmacopœia the same name indicates the strongest acetic acid that can be obtained, namely, that containing only one atom, or about 15 per cent. of water; the acetic acid of the Dublin College contains about 35 per cent. of water. The composition of these three acids, all bearing the same name, may be thus represented :

	Edinburgh.	Dublin	London.
Anhydrous acetic acid . . . . .	85	65	31
Water . . . . .	15	35	69
	<hr/> 100	<hr/> 100	<hr/> 100

*Acidum Hydrochloricum Dilutum.*—There are considerable discrepancies in the strength of this, as well as of the other diluted mineral acids, as prepared according to the instructions of the three colleges, as the following statement will show :

	Dublin.	Edinburgh and London.
Hydrochloric acid . . . . .	10	5
Water . . . . .	11	15
	<hr/> 21	<hr/> 20

*Acidum nitricum dilutum :*

	Dublin.	Edinburgh and London.
Nitric acid . . . . .	3	1
Water . . . . .	4	9
	<hr/> 7	<hr/> 10

*Acidum sulphuricum dilutum :*

	Dublin.	London.	Edinburgh.
Sulphuric acid . . . . .	1	1½	1
Water . . . . .	7	14½	13

*Acidum Hydrocyanicum Dilutum.*—This acid, made according to the London Pharmacopœia, contains two per cent. of real hydrocyanic acid; that of the Edinburgh Pharmacopœia contains rather more than three per cent.; while that of the Dublin Pharmacopœia is necessarily of variable and uncertain strength. In this country Scheele's acid, which contains from four to five per cent. of real acid, is frequently prescribed by medical men. These differences in a medicine of such energy and importance are much to be regretted. The strength of the London Pharmacopœia is undoubtedly preferable to the others.

Among the ethereal preparations, there is ordered, in the London Pharmacopœia, a compound called oleum ethereum. There is no formula for the preparation of this oil in either of the other Pharmacopœias, and the process given by the London College is

\* Med. Gaz., July 4 and 11, 1845.

said by some practical men to be impracticable, or at least to be so uncertain in the product afforded, as to render it very expensive; and it is doubtful whether the substance generally met with under the name of *oleum ethereum* is really that which the College have described.

*Spiritus Etheris Nitrici*.—There is a great difference between the strength of the sweet spirit of nitre made according to the London, and that made according to the Edinburgh Pharmacopœia. The latter directs a pure hyponitrous ether to be first made, and then one part of this by measure to be mixed with four parts of rectified spirit. The resulting spirit, therefore, contains one fifth of its volume of hyponitrous ether. The process of the London College yields a product which varies considerably in strength, the proportion of ether present depending upon the quantity of ingredients operated upon, and the rapidity with which the distillation is conducted. When made according to the London process, it never contains half as much ether as that made by the Edinburgh process.

*Aconitina* is directed in the London Pharmacopœia to be made from *Aconitum paniculatum*; in the Edinburgh, from *Aconitum napellus*. Dr. Fleming states that the *Aconitum paniculatum* contains very little of the alkaloid, and other authors have represented it as being much less active than the species ordered by the Edinburgh College. The *Aconitum napellus* is generally used.

*Liquor Ammoniac*, of the London and Edinburgh Pharmacopœias, has a specific gravity '960, and contains 10 per cent. of ammonia; that of the London Pharmacopœia has a specific gravity '950, and contains 12·5 per cent. of ammonia.

*Aqua Destillata*.—Mr. R. Phillips, many years ago, in his Notes on the Pharmacopœia, pointed out the injurious effect of the spirit ordered to be added by the college, in causing distilled waters to become acid, the spirit being converted into acetate acid. This has also been recently noticed by Mr. Warrington in a paper read before the Chemical Society.\* In the London and Edinburgh Pharmacopœias, the spirit is directed to be added to the ingredients previously in distillation, and it has been stated that the effect of this is to improve the flavor of the product. The Dublin College, however, orders the spirit to be added after the water has been distilled (as did a previous London Pharmacopœia), the object being, no doubt, the preservation of the water, but the contrary effect is certainly produced.

*Cataplasma Sinapis*.—In the London Pharmacopœia, this is directed to be made by adding boiling vinegar to the powdered linseed and mustard-seed. As this cataplasm is, it is presumed, intended as a stimulant and rubefacient application, the use of boiling vinegar is obviously objectionable. The rubefacient property of the mustard depends upon the presence of a volatile oil, not originally existing in the mustard-seed, but developed by the action of heat and moisture upon two principles somewhat analogous to the amygdaline and emulsine in the almond. The principle corresponding with the emulsine is, however, coagulated by a high temperature, or by the action of acids, and is then incapable of generating the volatile oil. The stimulating effects of the cataplasm would be more uniformly and successfully produced if the mustard were first mixed with warm water, and the vinegar afterwards added.

*Extracta*.—In the preparation of extracts from the expressed juices of plants, the London College directs the inspissation to be effected without removing the *fecula*; the Edinburgh College, on the other hand, directs the *fecula* to be separated, and the filtered juice to be evaporated. It would be desirable to elicit information from those who have had experience in this class of preparations, and especially to ascertain how far the presence of the *fecula* affects the preservation and the properties of the extract. That from liquorice is very properly ordered, in the Edinburgh Pharmacopœia, to be made from the dried root, and that from the poppy from the unripe capsule.

*Infusa*.—There is much discrepancy in the formulæ of the several Colleges for the preparation of infusions. *Infusum anthemidis* is ordered by the London College to macerate for ten minutes; by the Edinburgh College for twenty minutes; and by the Dublin College for twenty-four hours. The Edinburgh College has ordered cold water for making *infusum calumbæ*, and *infusum gentianæ*, and in other respects the formula for the latter infusion differs from those of the other colleges. Again: the London College orders the *infusum rosæ compositum* to macerate for six hours; Edinburgh,

\* See Article 1 of this Report.

four; and Dublin, half-an-hour. The infusum digitalis of the Edinburgh Pharmacopœia is more than twice the strength of that of the London.

*Liquor Potassæ* of the London Pharmacopœia is described in the notes as being of specific gravity 1·063; that of the Edinburgh College is directed to be made of specific gravity 1·072; and that of the Dublin of specific gravity 1·080.

*Alcohol*, according to the London Pharmacopœia, consists of 92 parts of absolute alcohol, and 8 parts of water; according to the Dublin Pharmacopœia, it contains about 6 per cent of water, and, according to the Edinburgh, it is, what its name purports, absolute alcohol, or nearly so.

*Spiritus Ammoniac*, made according to the London process, consists of a solution of carbonate of ammonia in spirit; that made according to the Edinburgh process is a stronger solution of caustic ammonia in spirit. This discrepancy in the formulæ for spiritus ammoniac has sometimes led to a very important difference in the products of another process given in the Edinburgh Pharmacopœia, namely, that for tinctura opii ammoniata. If this tincture be made with the spiritus ammoniac of the London College, it will contain none of the narcotic property of the opium, whereas, if made with the spiritus ammoniac of the Edinburgh College, it will be an active and valuable remedy, constituting the Scotch paregoric.

Mr. Squire then proceeds to compare, in a tabular form, the corresponding tinctures of the three Pharmacopœias; these, for want of space, we must omit, and proceed to his concluding remarks.

Other instances of discrepancies in the formulæ of the three Colleges might be adduced, but those already given will suffice for the purpose intended. He then directs attention to discrepancies of another kind, *not existing among the formulæ of the different Colleges for preparations bearing the same name*, but among formulæ all contained in the same Pharmacopœia for preparations of the same class. In alluding to these, he confines himself to the London Pharmacopœia. Thus, taking, for instance, the formulæ for the diluted acids, we find no uniformity in their relative strengths or saturating powers.

There appears no reason why the liquid diluted acids should not be all of one saturating power (the hydrocyanic being made the exception to the rule). If mixed in the following proportions—three measures of sulphuric acid and thirty of water, three of nitric acid and fifteen of water, three of muriatic acid and five of water, they will be found to have severally about the same saturating power as our present diluted sulphuric acid. They might then be accurately adjusted, so that a fluid drachm should exactly saturate twenty-eight grains of crystallized carbonate of soda.

The acetate and phosphoric acid, and any others that may at any future time be introduced into the Pharmacopœia, should be brought to the same strength. The prescriber would thus be relieved from the trouble he must now take in distinguishing between the different strengths of this class of medicines, and the circumstance of the acids being tested as to their saturating power during the process of dilution, would ensure their uniformity.

In considering how far it would be possible to introduce a similar uniformity of strength in other classes of medicines, he has especially directed his attention to the tinctures.

By adopting the process of percolation in the preparation of tinctures, there would, of course, be no difficulty in effecting the object alluded to, and it would only be necessary to fix upon any one tincture, such as that of opium, or of foxglove, as the standard, and to adjust the strength of all the others, so that their ordinary doses should correspond. On referring to Mr. Phillips's list of doses in his "Translation of the Pharmacopœia," it appears that there are

12	Tinctures, whose maximum dose is	f 3j.
13	" " " "	f 3ij.
11	" " " "	f 3iij.

There are three, namely, the compound tinctures of aloes, of rhubarb, and of senna, the doses of which exceed the above.

The fluid alkaline preparations would form another class, the doses of which might be made to assimilate.

§ II.—*Materia Medica.*

5. *Cod-liver Oil; its Preparations and Uses.*—The following observations on this important remedy are extracted from an essay on the subject by Dr. Donovan.

In the time of Dr. Percival, of Manchester, this oil was so largely employed in the hospital of the town, that nearly a hog'shead of it was annually consumed. It was given in obstinate chronic rheumatism, in sciatica of long standing, and as a restorative in old age, when, from various causes, the muscles and tendons become rigid, and the flexibility of the joints is impaired. Dr. Percival compared its effects experimentally with those of guaiacum, in diseases for which the latter was proper, and found the oil always superior. In irritable habits he found the pulse sometimes accelerated by it; a glow of warmth was sometimes felt throughout the whole body after each dose, and a gentle perspiration was often produced. He varied the dose from one tablespoonful to three, twice, thrice, or four times a day. In many cases it was found serviceable to rub the parts affected with the oil during its internal exhibition. Either fever or inflammation, he says, forbids the use of it entirely. His mode of administration was to form an emulsion of half an ounce with an equal quantity of peppermint-water, by means of forty drops of aqua potassæ, the draught being washed down with a teaspoonful of lemon-juice, to liberate the oil in the stomach. For a long time cod-oil, as a curative agent, fell into disuse in the British Isles, but in Germany it has maintained its character up to the present day.

Mr. Donovan endeavors to reconcile the different accounts respecting its physical character by taking into consideration a few facts which he has himself observed. With regard to the color, it is to be observed that we can give the oil any desired hue, from the palest yellow to the deepest brown, by a very simple means. "I was long puzzled," he observes, "by the great variety of colors which the oil assumed when the process for obtaining it appeared to me the same. At length I observed that livers, even those that were perfectly white, gradually became red when exposed to air. When kept for a few days, a kind of flesh-colored emulsion, consisting of oil and water, spontaneously oozed out; and the color continually becoming more red, the contained colorless fluids appeared to undergo a process of sanguification, until at length a bloody water separated and left some detached oil. I therefore made the following experiment. Out of a large supply I selected fifty livers that were perfectly and equally pale. These were divided into five parcels of ten each; the first parcel was subjected to the process of extraction immediately; the second on the third day after; the third on the sixth day; and so on to the tenth, which was done on the thirtieth day. The resulting oils presented a series of colors, deep in proportion to the time, the first being very pale, and the last very brown. Thus the longer the livers have been exposed to the air the redder they become, and the greater will be the quantity of the newly-elaborated coloring matter taken up by the oil. This will happen whether the extraction has been hastened by heat, or has proceeded in the cold; and by putrefaction of the livers the deepest color will at length be obtained. Thus we understand the cause of the great differences in color which the commercial oil presents; and it would be difficult to conceive how the solution of some coloring matter, derived from a kind of imperfect blood, reddened by contact with oil, could impart curative powers, and thus sustain the preference claimed for the orange oil by the German physicians. I can only say, that the pale is the only kind which, for the last three years, I have supplied abundantly to the profession, and that its efficacy has been found in many cases surprising. There is another ground on which the dark-colored oil has been preferred by those who believe that its therapeutic agency depends on the presence of iodine. Iodine is soluble in cod-liver oil, and the solution is deep-colored in proportion to the quantity dissolved; hence the notion naturally presented itself, that the brown oil may contain the greatest portion of iodine. To obtain some information on this subject, I dissolved iodine in pale cod oil, and thus formed a deep orange solution, of exactly the same hue as a sample that was naturally so tinged, and in which I had not dissolved any iodine. To both oils I added an equal quantity of alcohol, and, after equal agitation, poured off the alcohol from both. The alcoholic washings of the oil to which iodine had been added rendered a mixture of water and starch purple; but the alcohol effused from the oil, naturally orange, had no such effect; hence there was no iodine present, at least in the free state, and it is only in the free state that it could communicate color. It is to be observed, how-

ever, that for explanation of the assumed medicinal superiority of orange oil, recourse need not be had to the supposition that the curative principle is iodine, inasmuch as every known fact impugns that notion. First, many of those patients who have been cured by cod oil were not in the least benefited by a previous course of iodine; this has been shown by Dr. Tauffield; 2dly, chemical analysis has discovered only minute traces of iodine in some specimens of cod oil, and others were entirely destitute of it; 3dly, the tendency of iodine is to render the person thin who uses it, while the effect of cod oil is to fatten. Lastly, none of the oil prepared by me, when agitated with alcohol, communicated any impression of iodine, although the oil was eminently successful as a medicine, and its color contra-indicated the presence of free iodine. I adhere to the opinion formerly expressed, that the lower the temperature at which the oil is obtained the better; the degree formerly specified (192°) is too high; its tendency is to communicate a rank, fishy smell, in place of the delicate odor of that which is quite recent, and has been obtained by a very low temperature. A high heat affords the oil in greater quantity, but it has the rank smell of barrelled herrings, and will disgust and sicken the patient. A low heat, as 120° or 130°, gives a smaller product, but of a fine quality. The proper season for preparing the oil is early in January, when the livers are plump, firm, large, white, and full of oil. It is necessary to mention that the cod is subject to diseases of the liver. Sometimes the liver is found flabby, apt to lie flat on a plane surface, like a bag half empty; sometimes it is specifically lighter than water, and those that float in water should be rejected. Good livers should cut smoothly under a sharp knife, and not tear; when cut, none of the substance should flow out in a half-liquid state. When the oil has been extracted by a low heat, from sound, white, fresh, plump livers, it is an exceedingly nice article, which most people swallow without the least disgust, at least after the first two or three doses. Some take it with absolute liking; they compare its smell to that of the flesh of a lobster's claw, and I have myself used it as an excellent sauce for cod-fish. Much of the ill-repute which this oil has borne from some writers, is no doubt attributable to the bad condition in which it was supplied. Some direct the oil to be taken in emulsion; I believe it is more easily taken by itself, or floating on water or hot milk. The dose for an adult is a tablespoonful three times a day; for the first two or three doses a dessert-spoonful may suffice. The quantity of oil produceable from livers depends on the period of the year. In the beginning of January I found that 1000 livers afforded 37 imperial gallons; at the end of February the same number of livers produced only 23 gallons of oil. In the beginning of January 1000 livers, of average size, weighed 900 pounds; while on the last day of March the same number weighed but 575 pounds. The oil was, in these different seasons, equally pale, and the livers equally white, although so much smaller and more flabby in the latter season. The stearine of the oil is abundant, and of a pearl-white color; it always separates as a white sediment in cool weather; when warmed it melts into an oil, in taste, color, and smell, the same as the oil itself, and there is no reason to doubt that it possesses the same medicinal properties. The brownest oil may be rendered nearly yellow by long-continued exposure to the sun's rays. There is a circumstance which deserves particular notice. It is proper to wash the livers from gall and filth before they are heated; but this should not be hastily performed. The gall-bladder which adheres to the liver should, in the first instance, be removed; the gall is green, acidulous, and sweetish-bitter. If the livers have been quite recent, and the heat rightly managed, the oil will be fully as thin as water; but the case will be very much otherwise under opposite circumstances. In the cod's liver the oil seems to exist combined with water, in the state of a natural emulsion; the pure oil, if violently shaken with water, will form a transitory emulsion. The natural emulsion in the liver is decomposed by heating, the water separates, and the detached oil appears. I shall now state such facts as have come to my knowledge with regard to the medical efficacy of this oil in several diseases.

The conclusions arrived at by Dr. Bennett, whose extensive knowledge and experience on this subject render him an excellent authority, will form a proper introduction. He says the placid and phlegmatic bear the administration of cod oil the best; the plethoric worst. In scrofula, with torpidity, it is directly indicated; if irritation be

\* We have an analysis of one oil, however, which contained 0.394 per cent.; and of another which afforded but 0.162; others again contained less. See Bennett on Cod-Liver Oil.

present, its employment requires management and great care. The contra-indications are plethora, disposition to inflammation, profuse menstrual or hemorrhoidal discharge, total loss of appetite, nausea, and vomiting, pain in the abdomen, and it is contra-indicated during the existence of epidemic diarrhoea or dysentery. It should not be given in the morning, fasting; for adults the dose should be gradually increased to six tablespoonfuls; a fat animal diet supports the action of the oil. Dr. Bennett says, that in general articular rheumatism, where the usual remedies failed, cod oil cured speedily. A chronic lumbago, of several years' standing, was cured in seven months by the oil. A most intractable case of sciatica was also cured by taking a four-ounce dose every morning. In rachitis and scrofulous caries of the bones it was eminently successful. In no case, except rachitis, are the good effects of the oil so well established as in the atrophica mesenterica, the disease being cured by it often when every other remedy has failed, and even when all hopes of the patient's life have been abandoned. In tubercles of the lungs, which have not yet softened, or are in the first stage of softening, Dr. Häser says that this oil is by far the most useful remedy. A young man, laboring under the effects of a large vomica, attended with extreme emaciation, profuse night sweats, hectic fever, cough, loss of appetite and strength, was so far benefited by the oil, that his symptoms were almost entirely removed; but having taken a disgust to it, and it beginning to disagree with him, he relapsed and died. A woman, who labored under all the constitutional as well as physical signs of phthisis, with a cavern in the right lung, and other bad symptoms, was completely restored by the use of this oil. Several cases of chronic affections of the skin in scrofulous constitutions have been completely cured by it when all other remedies failed. The external use is also serviceable when hard, dry scabs exist. Brefeld relies altogether on its external application. Of its efficacy in skin diseases of various kinds we have the testimony of Dr. Marshall Hall, Dr. Richter, and Dr. Nebel. In scrofulous diseases of the eye, the oil has been found of great benefit by Brefeld, Carron du Villards, Von Ammon, Pifford, Abendheimer, Gruby, and Dieffenbach. Such is a summary of the statements of Dr. Bennett. The efficacy of cod oil in consumption, when there were cavities, tubercles, purulent expectorations, and the whole train of miserable symptoms, has also been shown by Dr. Emile Pereyra, physician to the hospital of St. André, Bordeaux, in an essay published two years since."

Mr. Donovan concludes his essay with a number of cases in which cod-liver oil has proved successful in the hands of Dublin medical practitioners. These comprised cases of enlargement of the glands of the neck, enlarged tonsils, hæmoptysis with cough and great debility (incipient phthisis?), scrofulous disease of the knee-joint, ditto of testicles, &c. With respect to its power in diseases of the eye, Mr. Wilde states that "in cases of pannus and long-continued chronic ophthalmia, attended with granular lids, &c., where the constitutional powers had fallen below par, shown by diminution in volume, and increased quickness of pulse, pallor of countenance, coldness of the extremities, a clammy condition of the skin during the day, and heat and restlessness at night; together with loss of appetite, and a large flabby, putty-colored tongue, which is usually attendant on such broken-down strumous patients," he has found it a most useful remedy; in fact, in all cases in which tonics and nutrition were indicated.

The author of this Report has used cod-liver oil extensively for several years, his attention having been first directed to it by Dr. Bennett in 1840, and he can confidently bear out the concluding statement of Mr. Donovan, "that cod-liver oil is a most useful addition to our materia medica; that it produces effects of which no other known medicine is capable; and that it is well worthy of the attention of the medical profession."\*

6. *Oils, their action on the Animal Economy.*—MM. Gluge and Theirnesse have instituted a series of experiments on this subject. They administered olive and cod-liver oil to dogs, rabbits, and kids, by injection into the veins, and also by the mouth. When either oil was injected into the veins, it usually produced dyspnoea, debility, painful sensations, and some affection of the circulation. The animals after a few days usually recovered from the first injection, but died very shortly after repeating the operation from difficulty of breathing, rapidly failing pulse, and complete prostration. On dissection, the lungs, liver, and kidneys were usually found in a more or less morbid state, exhibiting symptoms of inflammatory action; globules of oil and a peculiar kind of

\* Dublin Journal of Med. Sciences, Sept., 1845.

crystals were also very commonly noted in these structures. The blood was more or less fluid, and peculiar crystals were also observed in it. When pure cod-liver oil was used its action did not seem to differ from that of olive oil; but the brown or dark colored cod-liver oil produced rapid death, often within an hour after its injection. In these cases the lungs were gorged with black blood and emphysematous; and the blood besides being fluid contained a much larger proportion of oily globules, and of the peculiar crystals above alluded to.

When the oil was given by the mouth the dose was daily increased from a table-spoonful. For several days or weeks the animal maintained its health, but at length it began to refuse nourishment, got feverish, suffered from dyspnoea, agitation of the limbs, weakness, and gradually sunk. In every case the lungs were found inflamed, congested, often hepatized, and everywhere penetrated with oil. The liver and kidneys were also in general more or less engorged with blood.

From these experiments they deduce the following conclusions:

1. That olive-oil and pure fish oil do not act differently on the animal economy, whether taken by the mouth or injected into the veins, excepting in a few exceptionable cases in dogs, when the fibrin of the blood and muscles seemed to acquire additional density when cod-liver oil was taken internally. But this result was not constant.
2. That unclarified dark-colored fish-oil, when injected into the veins, produces rapid asphyxia and decomposition of the blood, as evidenced by the irregular form of the blood-corpuscles, and the presence of crystals in that fluid.
3. That the fatty oils, however introduced into the body, have a natural tendency to deposit themselves in the lungs, liver, and kidneys.
4. That in these organs they are deposited in two different ways; they exude into the parenchyma through the capillary vessels, or they become deposited in the biliary cells, the pulmonary vesicles, or the uriniferous canals.
5. That if a small quantity of oil be injected at once, the animal may recover from the effects.
6. That the effect of oil administered by the mouth varies much, according to the dose, and the period of time when the animal takes it.
7. That when the dose is daily increased, the animals lose their appetite, become lean, cough, suffer from dyspnoea, and at last present all the signs of severe pneumonia, to which they fall victims.
8. That the pathological appearances consist of total or partial hepatization of the lungs, with accumulation of fatty matters in the parenchyma of the lungs, liver, and kidneys.
9. That the hepatization of the lungs is always, as to its extent, in proportion to the quantity of oil introduced into the system by the stomach.
10. That the oil administered by the mouth is absorbed by the intestinal villi, and being thrown by the circulation on the lungs, liver, and kidneys, produces fatty degeneration of these organs.
11. That the particular form of pneumonia caused by large doses of oil is similar to the bilious pneumonia of the older physicians.
12. That when oil is given medicinally for any length of time we ought to exercise the muscles as well as the lungs, and watch carefully its action, for although cod-liver oil may be a powerful therapeutic agent, its prolonged use (as commonly administered) is not unattended with danger.
7. *Belladonna*.—Stievenart of Valenciennes has continued his researches on belladonna. The following is a brief extract of the physiological effects produced on 400 children to whom the drug was administered. Severe headache, with well-marked dilatation of the pupils, was observed in 212 cases. The pain usually lasted for about half an hour, and was generally referred to the region of the frontal sinus. This effect was frequently experienced by the author on taking a dose of twelve drops of the alcoholic tincture. A greater or lesser degree of delirium or hallucination was also observed in some (about twenty) of these cases, frequently lasting for several hours; twenty-five times there was pain in the throat for a short time. Well-marked redness of the skin was observed only five or six times; in 145 there was no apparent action of any sort produced. With regard to the method of administration, he regards the alcoholic tincture as the most certain, and the extract as the least efficacious. The remedy was given in this extensive way in order to test its asserted prophylactic power in reference



to scarlatina, and it is worthy of remark that although that epidemic was raging in the neighborhood, none of those who submitted to this treatment were affected.

8. *Lactucarium*.—Aubergier has continued his researches on lactucarium. He shows that the best form of exhibition is the alcoholic extract. The lactucarium is twice successively digested with alcohol of '922, the fluids are then mixed, distilled, and evaporated on the water-bath. During evaporation the fluid must be constantly stirred. The extract obtained in this manner is brown, very bitter, and not deliquescent. It may be given in pills, or in the form of syrup. For the syrup, Aubergier recommends that every 500 parts should contain one of the extract. A case of insomnia after typhoid fever, accompanied with severe epistaxis, in which lactucarium was of service, after the failure of morphine and other sedatives, has been recorded by Homolle. He commences with a grain and a half, and increases the dose to between four and five grains, given in the form of syrup. It was continued for three weeks, and produced calm and refreshing sleep, unaccompanied by bad effects.

9. *Indian Hemp*.—Lieautaud has communicated a series of experiments on this substance to the Academy of Sciences. During a residence of nearly two years in Indian China he had numerous opportunities of witnessing its physiological effects in producing inebriation. Generally the inebriations were the more intense in proportion to the amount of resin in the hemp. Drunkenness produced by the gunjah, taken as a drink, is characterized by a peculiar state of ecstasy without convulsive phenomena. Liquids of this nature excite the nervous system much more energetically than when the same amount of drug is smoked. The sequelæ are less distressing than those produced by opium, but the moral degradation and the dreadful consequences arising from it are closely allied. As there is every probability that this substance will soon find a place in our British Pharmacopœias, all trustworthy experiments with it are deserving of a passing notice.

Exp. 1. Ten grains of cherries of Nepal dissolved in alcohol were given to a moderate-sized dog. In the course of half an hour it fell into a restless sleep, and on awakening and attempting to walk, it presented obvious indications of drunkenness. It devoured with avidity any food placed before it, and again relapsed into a state of stupor and torpidity. These symptoms continued for about two hours; in the course of six hours it had perfectly recovered.

Exp. 2. A drachm of magoun was given to a little dog, who seemed to enjoy it extremely. In the course of twenty minutes he was decidedly drunk, and did not altogether recover in less than four hours.

The alcoholic extract of gunjah, in doses of between two and three drachms, was given to three young goats, but no very marked effects were produced.

From these and other experiments, Lieautaud concludes that the inebriating effect of Indian hemp is constantly to be observed in the carnivora, and in fishes; the herbivora are apparently unaffected by it in any dose.

The animals experimented on did not exhibit the least indication of pain, or of any convulsive action.

The following observations on the method in which the cannabis is taken in the East, are extracted from a paper on this drug by Steeze, an apothecary practising at Bucharest.

The tops and all the tender parts of the hemp-plant are collected after the period of inflorescence, dried and kept for use. It must be premised that the hemp-plant is, in the east, distinguished by its narcotic properties, although botanists are unable to detect any difference between this and the European species. The dried hemp, or haschisch, is used—

1. Boiled in fat butter or oil with a little water; the filtered product is employed in all kinds of pastry.

2. Powdered for smoking; five or ten grains of the powder are smoked from a common pipe (*tsubuk*) with ordinary tobacco (*tutun*), or from a water-pipe (*nargiele*) with another kind of tobacco (*tombeki*).\*

3. Formed with tragacanth mucilage into pastilles, which are placed upon a pipe and smoked in similar doses. These last two preparations are also termed *esrar*;† they are the

\* The tombeki is probably the leaf of a species of *Lobelia*; it is smoked in a nargiele, and is uncommonly narcotic; so much so, that it is ordinarily steeped in water for a few hours before it is used, to weaken it, and the pipe is charged with it whilst it is yet wet.

† *Esrar* is the Arab word for a "secret."

most active of all the preparations of haschisch, and the first pipe will cause cerebral congestion in beginners.

4. Made into an electuary with dates or figs and honey. This preparation is of a dark brown, almost black color, and tastes of dates and hemp; it is less active than the esrar.

5. Lastly, another electuary is prepared with the same ingredients with the addition of spices—cloves, cinnamon, pepper, amber, and musk. This preparation is used as an aphrodisiac.

Haschisch is said not to produce stupor, but the most pleasant species of intoxication. The person under its influence feels with perfect consciousness in the best of humors; all impressions from without produce the most grateful sensations: pleasant illusions pass before his eyes, and he feels comfortably happy; he thinks himself the happiest man on earth, and the world appears to him Paradise. From this imaginative condition he passes into the every-day state, with a perfect recollection of all sensations, and of everything he has done, and of every word he has spoken. The effects of a continued use of the narcotic are emaciation and nervous debility.\*

10. *Conium Maculatum*.—Dr. Earle† has performed a series of experiments on himself, with the view of determining the physiological effects of this plant, and its preparations. He took the extract three times a day, beginning with grain doses, and increasing each dose by a grain daily, so that on the tenth day he took ten grains three times a day. The doses were afterwards increased in a more rapid ratio. On taking 25 grains three times a day, he experienced, during breakfast, a disagreeable sensation, like the "fulness of the head" occasioned by a ligature round the neck. This was accompanied by a very slight vertigo. These effects were not perceived after either of the subsequent doses. On the following day (Jan. 16th), "Morning: took 30 grains; effects not so great as yesterday morning; 10 o'clock A.M. took 40 grains upon an empty stomach; it was followed by a greater tendency to vertigo than before, with a sensation as if the eyes were swollen and unnaturally protuberant. Evening: took 40 grains two hours after supper. Similar effects, but in a slight degree, and less than on the morning of the 15th, with 25 grains taken fasting. Slept seven hours and a half.

"17th. Morning: fifteen minutes before breakfast took 45 grains. While at the table the sensations of fullness of the head, and tumefaction or enlargement of the eyes, were uncomfortable and oppressive. The eyesight, slightly dim, became more so upon rising from the table, and tendency to vertigo was at the same time increased. There was a feeling of mingled weariness and weakness in the knees, and the gait was not so firm as usual. Pupils of the eyes apparently somewhat dilated. 1 o'clock P.M., took 45 grains soon after eating an apple; in fifteen minutes there was a sensation of heat in the gastric region, followed by symptoms similar to those just described, though not of nearly so great severity. Evening: took 45 grains; effects much the same as at 10 o'clock. Slept seven hours and three quarters.

"18th. Morning: took 50 grains; vertigo commenced in twenty minutes, and in thirty minutes the dimness of vision, and peculiar sensation in the knees already noticed. I now felt, for the first time, the sensation last noticed, in the lower part of the *biceps brachialis* muscle. I particularly studied this feeling, and can give no idea of it except by comparing it to a mixture of weariness and feebleness or debility. It was not unpleasant, and there was a constant disposition to flex and extend the forearm. Pupils apparently dilated. Ten o'clock A.M. took 60 grains; ten minutes afterwards the warmth in the gastric region was perceived, and in fifteen minutes cerebral symptoms commenced. In thirty-five minutes the action of the medicine seemed to have reached its maximum, which it maintained about fifteen minutes, with the sensations in the head, elbows, and knees already described, and to a greater degree than after any dose previously taken. In one hour and a half from the time of taking it its apparent effects had entirely disappeared. Half-past nine o'clock P.M., took 60 grains after eating apples. The action was less powerful than in the middle of the day. Slept six hours and a half."

Altogether seven succeeding doses of 60 grains each were taken. In addition to the above symptoms, double vision was observed on the two following days. No un-

\* Repertorium für die Pharmacie, Band xxxvii., Heft 2.

† The American Journal of Medical Sciences, July, 1845.

pleasant effects followed the sudden suspension of the medicine. In a second series of experiments the dose was increased to 100 grains: the symptoms were nearly identical with those already described. The pulse was perfectly regular during the period of greatest influence, and perhaps a few beats slower than usual; it was also fuller and stronger. There was no perceptible augmentation or diminution of the urine during the course of these experiments; but on two occasions (after taking the largest dose in each experiment) there was a sensation of acute lancinating and transient pain in the region of the neck of the bladder. As a soporific it seems perfectly inert.

11. *Aconite*.—The most important contribution to our knowledge of the *materia medica* that has appeared during the last six months is undoubtedly Dr. Fleming's treatise on aconite.\* Passing over the first two sections which embrace the consideration of the history, botany, and physical characters of the *aconitum napellus*; the influence of climate and culture upon its properties; the respective activity of different parts of the plant; the influence of seasons on the activity of the roots and leaves; and the physiological action of the plant on vegetables and animals,—we arrive at the consideration of its physiological effects on man. The topical action is first considered. It acts as a direct sedative to the nerves of sensation, and, as might be expected, its action is most marked when applied to a surface abundantly supplied with nerves. The physiological action on man in small or medicinal doses is considered under the four following degrees of operation.

*First degree of operation*.—In the course of twenty minutes or half an hour after the exhibition of five minims of the tincture, a feeling of warmth in the stomach is usually experienced, which is occasionally accompanied by a slight nausea and oppression of the breathing. After the lapse of thirty or forty minutes this sense of warmth is diffused throughout the body, and in a few minutes more is attended by numbness, tingling, and a sense of distension of the lips and tongue. There is also tingling at the tips of the fingers, and a peculiar sensation is felt at the roots of the teeth. The feeling of warmth soon disappears, but the numbness and tingling of the lips and fingers continue for a period, varying from one to three hours. Slight muscular weakness is generally experienced, with indisposition for exertion either mental or corporeal. In about half an hour more the pulse is found to be diminished in strength, and in another hour both the pulse and the respiration have become less frequent. Thus a pulse which, in the normal state, beats seventy-two in the minute, will by that time have fallen to about sixty-four, and the respirations, supposing them to have been eighteen, to fifteen or sixteen.

*Second degree of operation*.—Should a dose of ten minims be given at first, or a dose of five minims be succeeded in two hours by another of equal amount, these symptoms supervene more rapidly, and with greater severity. The tingling extends along the arms, and the sensibility of the surface is more or less impaired. In an hour and a half the pulse will probably have fallen to about fifty-six beats in the minute, and become smaller and weaker than before, still maintaining, however, perfect regularity. The respirations will have diminished to about thirteen, presenting at the same time a slow, laboring character. Great muscular debility is now experienced; a giddiness, with confusion of sight, comes on when the erect posture is assumed. The individual sinks into a lethargic condition, evinces great disinclination to be disturbed, although he rarely falls asleep, and complains much of chilliness, particularly in the extremities, which are cold to the touch. These phenomena continue in their full intensity from three to five hours, when they gradually disappear, a sensation of languor, which lasts for several hours more, alone remaining. This is the utmost extent to which I would recommend the physiological effects of aconite to be carried, in order to obtain, with safety and success, its therapeutic action.

*Third degree of operation*.—On the administration of five minims more two hours subsequent to the last dose, the sense of warmth, and the numbness and tingling, again spread rapidly over the body. The sensibility of the surface is still further diminished; lancinating pains in the joints are occasionally complained of; the headache, vertigo, and dimness of vision are aggravated; the countenance grows pale and anxious; the muscular feebleness increases; the voice becomes weak, and the individual is fre-

\* An Enquiry into the Physiological and Medicinal Properties of the *Aconitum Napellus*. By Alexander Fleming, M.D., President of the Royal Medical Society of Edinburgh. London, 1845.

quently impressed with the dread of approaching dissolution. Occasionally the pulse is reduced still further in strength and frequency, perhaps falling to 40, or even 36 beats per minute, but still maintaining its regularity. More frequently, however, it rises to 70 or 80, and becomes small, weak, and probably more or less irregular. The respiratory movements are also irregular, being either short and hurried, or deep and sighing. The surface is moist, and still farther reduced in temperature. Sickness may now come on; and, if formerly present, is much aggravated, and probably attended by vomiting. These symptoms do not entirely subside for two or three days.

*Fourth degree of operation.*—On the administration of a fourth dose of five minims, two hours after the third, the symptoms assume a more alarming character. The countenance becomes pale and sunken; froth issues from the mouth, and the prostration increases. Some thus affected have stated that they felt as if dying from excessive loss of blood. Consciousness usually remains, or there may be slight wandering delirium, as occurs also after profuse hemorrhage. The voice is whispering, or is altogether lost. The pulse becomes still smaller, weaker, and more irregular, and the breathing more imperfect. The surface is colder than before, and is covered with a clammy sweat.

I have seen patients recover from this state under the administration of proper remedies. When the action of the drug is carried to a fatal extent, the individual becomes entirely blind, deaf, and speechless. He either retains his consciousness to the last, or is affected with slight wandering delirium, the pupils are dilated, general muscular tremors, or even slight convulsions, supervene; the pulse becomes imperceptible, both at the wrist and heart; the temperature of the surface sinks still lower than before, and at length, after a few hurried gasps, death by syncope takes place.

Dr. Fleming then treats in detail of the effects of aconite on the different systems of organs. We regret that we have merely space for his most important conclusions.

With respect to the action of aconite on the cerebro-spinal and muscular systems, he finds:

1. That it is calmative, anodyne, and antispasmodic.
2. That it is an advisable antiphlogistic in apoplexy, phrenitis, or any disease in which the circulation of the brain is excited.
3. That it is contra-indicated in headache arising from anæmia or chlorosis, and whenever there is a torpid or paralytic condition of the muscular system.
4. Its properties suggest its employment in convulsive or spasmodic diseases.

The following are the practical inferences deducible from a consideration of the action of aconite on the circulation:

1. That it is a powerful antiphlogistic.
2. That it is calculated to be of great value in all cases where there is inordinate activity of the circulation.
3. That it is contra-indicated, when there is obvious mechanical impediment to the passage of the blood, particularly through the heart or lungs. It is requisite, therefore, in every case, to ascertain that no such obstruction exists before commencing its use.
4. That it is contra-indicated, whenever there is irritability of the circulation, with great diminution of power, such as occurs after severe hemorrhage.

The practical inferences respecting its action on the respiratory system are these:

1. Aconite will probably be found a highly advantageous antiphlogistic in pneumonia, pleuritis, &c.
2. It seems calculated to be serviceable in spasmodic asthma.
3. It is contra-indicated in difficulty of breathing, arising from any other cause than inflammation or spasm.
4. In cases of advanced bronchitis, with excess of secretion, it would prove highly injurious, by diminishing still further the power of expectoration.

After noticing the effect of aconite on the alimentary canal and secretory system, he proceeds to the consideration of the effects of the drug in large and poisonous doses. This section belongs more to medical jurisprudence than to materia medica. He concludes it with the observation, that "four grains of the alcoholic extract have proved fatal, and two grains have produced the most alarming symptoms."

Section 4th, embracing the therapeutic action of aconite, abounds in matter of the highest interest, and deserves a most attentive perusal. We could not, in justice to the author, much abbreviate it, and we shall therefore conclude our notice with a few

observations on the method of administering aconite. The preparations expressly noticed by Dr. Fleming are :

a. *Tinctura Aconiti*. Take of root of *A. Napellus*, carefully dried and finely powdered, 16 ounces troy; rectified spirit, 16 fluid ounces; macerate for four days, then pack into percolator; add rectified spirit until 24 ounces of tincture are obtained. It is beautifully transparent, of the color of sherry, and the taste is slightly bitter.

b. *Extractum Alcoholicum Aconiti*. This is prepared by distilling, at a low temperature, the spirit of the tincture, until the consistence of an extract has been obtained. The process should be completely in a vapor bath. The color is dark-brown, or almost black; it has an agreeable smell, and a bitter taste. The dose is one third of a grain thrice daily; commencing with one sixth of a grain.

Of these two preparations, Dr. Fleming prefers the tincture, from its greater uniformity of action; the average dose is five minims three times daily, and to be increased, if requisite, by one minim each dose.

c. For external use, the following formula is recommended :

℞.	Aconitinæ . . .	gr. xvj.
	Spirit. rect. . .	℥ xvj, fere optime.
	Deinde adde axungiæ . .	℥ j, ut fiat unguentum.

If, after a few applications, this ointment loses its effect, the proportion of aconitina must be increased to three, four, or even eight grains to the drachm. (36.)

12. *Valerianate of Quinine* has been somewhat extensively used by Dr. Castiglione, who has communicated the results of eighteen cases. It was employed nine times in intermittent fever, twice in cephalalgia, twice in rheumatic pains, once in hemicrania, twice in epilepsy, and twice in supra-orbital neuralgia. Fifteen patients were cured within a space of two to eight days, three (viz. the two epileptic patients, and the case of hemicrania) were only relieved. The dose was half a grain every two hours, administered in a little sugar. The smallest quantity required to produce a cure was six grains, the largest thirty-five grains. In the majority of cases no peculiar symptom seemed to be produced by the remedy: three times it caused a sensation of burning in the throat and stomach, with sickness and vomiting; and, as in these three cases the salt was prepared from valerianate of lime and sulphate of quinine, the disagreeable symptoms might have arisen from the admixture of a little sulphate of lime. It is stated to act as a contra-stimulant and powerful febrifuge.

13. *Tannate of Quinine* has been recently administered by Dr. Hauff with great success in cases of neuralgia, and fever of an intermittent type, where the sulphate of quinine had failed. The dose is about the same as that of the other salts of quinine. This salt had been previously recommended in 1831 by Renarder, and in 1833 by Buchner, in similar cases.\*

14. *Monesia*. This remedy, which was brought very prominently forward a few years ago, but since then has gradually been merging into obscurity, has found a warm advocate in Dr. Halbout, of Genesee. He has never observed any bad effects from its administration, and regards it as a most important medicine in certain infantile disorders. The principal diseases in which he has administered it are, angina tonsillaris, aphthous affections, diarrhoea, menorrhagia, ulceration of the nipple (a wash composed of the extract of monesia and water, frequently applied), and solutions of continuity of the skin generally. He concludes with a notice of ulcerations of the rectum, which was completely cured by an ointment, and clysters, containing extract of monesia, after all other remedies had failed.

15. *Hydrocyanic Acid*. Liebig, in his lectures on the benzoile series, observes, that "the distilled waters of bitter almonds, and lauro-cerasus, is considered a highly important remedy, and has by many physicians been applied with excellent success, being in fact considered the most appropriate form in which to administer hydrocyanic acid. Physicians usually prefer the water of lauro-cerasus to that of bitter almonds, not because there exists the slightest difference in the nature and properties of these two waters, but because the distillation of the paste of bitter almonds is attended with greater difficulty than that of the leather-like leaves of lauro-cerasus; and, moreover, because the preparation of the water of bitter almonds is usually attended with the loss of a considerable amount of the hydrocyanic acid formed. The Pharmacopœias prescribe, for the preparation of the two distilled waters, definite quantities of bitter

\* Oesterlen's Jahrbücher.

almonds, or of lauro-cerasus; but if we take into consideration, that it is by no means proved that the leaves of lauro-cerasus possess the same composition, at all seasons, and, on the other hand, that bitter almonds are so frequently adulterated with sweet almonds; and if we, moreover, reflect upon the fact, that the amount of hydrocyanic acid, contained in the distilled water of bitter almonds and lauro-cerasus, is constantly diminishing, owing to certain peculiar modifications, which this acid undergoes, we cannot avoid coming to the conclusion, that the composition of these waters is subject to many vicissitudes. Physicians would, therefore, act very judiciously, were they to expel these waters from their pharmaceutical prescriptions, and to substitute for them a certain amount of amygdaline, dissolved in water, and mixed with emulsion of sweet almonds, since this remedy, prepared fresh every time when it is to be administered, will invariably possess the same composition: 17 grains of amygdaline yield 1 grain of anhydrous prussic acid; consequently, by mixing 34 grains of amygdaline with 66 grains of emulsion of sweet almonds, so that the total amounts to 100 grains, we obtain a fluid corresponding to the medicinal hydrocyanic acid of the Prussian Pharmacopœia (2 per cent.); one third grain of amygdaline corresponds to 1 grain of medicinal acid: the solution of 1 grain of amygdaline in 3 ounces of emulsion of sweet almonds, contains, consequently, 1 grain of medicinal acid for every ounce of the mixture.

We cannot conclude this Report without a favorable notice of the "Elements of Materia Medica and Therapeutics," by Drs. Ballard and Garrod. As a manual for students, it is the best that has yet appeared, and will be found to contain much matter well worthy of perusal by the practitioner. It possesses the especial advantage of carrying its information to the date of its publication.

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2. An Essay on the use of Narcotics and other remedial agents, calculated to produce Sleep, in the treatment of Insanity; for which the author obtained the Lord Chancellor's Prize in Ireland. By Joseph Williams, M.D. London, 8vo. 4s.

3. A Clinical Introduction to the Practice of Auscultation, and other Modes of Physical Diagnosis; intended to simplify the Study of the Diseases of the Lungs and Heart. By H. M. Hughes, M.D., Fellow of the Royal College of Physicians, Assistant-Physician to Guy's Hospital, &c. London, 12mo. 6s.

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The following TABLE OF FRENCH MEASURES is taken from Dr. Walshe's translation of Louis on "Phthisis."

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The French line =  $\frac{1}{12}$  of the English inch.

Measures of length.						English inches.
Meter	.	.	.	.	.	39.370
Decimeter	.	.	.	.	.	3.937
Centimeter	.	.	.	.	.	0.393
Millimeter	.	.	.	.	.	0.039
Measures of weight.						Grains Troy.
Gramme	.	.	.	.	.	15.438
Decigramme	.	.	.	.	.	1.543
Centigramme	.	.	.	.	.	0.154
Measure of capacity.						English pints.
Litre	.	.	.	.	.	1.760













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